Design Criteria for Span Tables:

Values in the maximum allowable rail span tables provided herein are subject to the following general criteria and additional criteria shown on individual span tables sheets. Values in span tables are based on the same engineering methodology and calculation algorithms used for U-Builder and are provided here for reference.

Building Assumptions

- Building Risk Category: II
- Mean Roof Height: 30 ft
- Roof Pitch: 0°-45°
- Site Elevation: 0 ft

Wind Design Assumptions

- Wind loads used are based on ASCE 7-16 Sec 29.4.4 with Provisions from SEAOC PV2-2017
- Exposure Category B, C, or D
- Basic Wind Speed = 90 – 180 mph
- Level terrain. Topographic factor, kzt = 1.0
- γE = 1.0 for 'Interior' spans, γE = 1.5 for 'Exposed' spans (ASCE 7-16, Fig. 29.4-7)

Snow Design Assumptions

- Ground Snow Load = 0-100 psf
- Exposure Factor coefficients of Partially Exposed condition
- Thermal Factor = 1.0
- Results based on uniform snow load

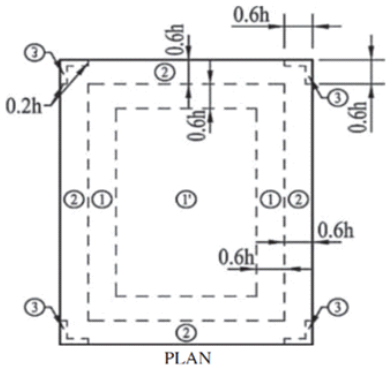
Seismic Design Assumptions

- 0.2-s Spectral Response Acceleration, SS ≤ 3
- S_S = 1.25 and 3 per criteria shown on individual span tables sheets.
- S_1 = 0.5
- Seismic site class D

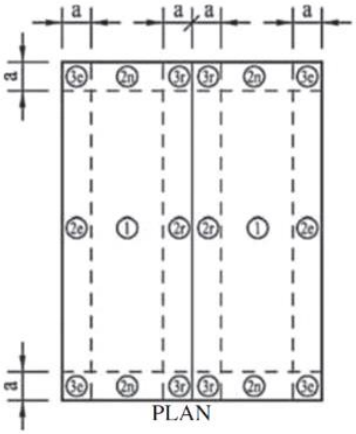
Array Assumptions

- Module orientation and Rail direction per criteria shown on individual span tables sheets.
- Maximum module dimensions of 40.1" x 67" (~19 sq.ft, 47.65 lbs) and 41" x 80" (~23 sq.ft, 58.6 lbs) per criteria shown on individual span tables sheets.
- Minimum distance between modules and roof edge is at least twice the module height above roof surface.
- Modules are parallel to roof surface and maximum height above roof surface is 5" to 10" depending on attachment type.
- Gaps between module rows and columns is 0.25" in to 1" depending on clamp type.
- The most restrictive of all roof zone spans shall be used when any part of the module is attributed to that span.
- 'Exposed' spans as defined in ASCE 7-16 sec. 29.4.4 shall be used when any part of an exposed module or panel as is attributed to that span.

Zone should be considered as per ASCE 7-16, Fig. 30.3-2A to 30.3-2D



Gable Roofs θ ≤ 7°

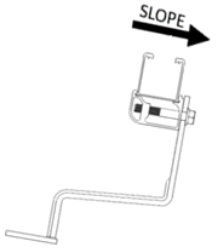


Gable Roofs 7°< θ ≤ 45°

Grouping of ASCE 7-16 Roof Zones (Gable and Flat)

- **Roof Tilt 0°-7°**
  - Roof Zone 1 = 1
  - Roof Zone 2 = 2
  - Roof Zone 3 = 3
- **Roof Tilt 7°-27°**
  - Roof Zone 1 = 1, 2e
  - Roof Zone 2 = 2n, 2r, 3e
  - Roof Zone 3 = 3r
- **Roof Tilt 27°-45°**
  - Roof Zone 1 = 1, 2e, 2r
  - Roof Zone 2 = 2n, 3r
  - Roof Zone 3 = 3e

Rails can be installed in these possible orientations.

	*CT2
Y+	Alternate orientation not allowed
Y-	

UNIRAC

ASCE 7-16	II	30 ft	Ss = 1.25	19 sq.ft	PORTRAIT	CROSS-SLOPE	NXT	NXT COMBO	Solarhooks CT2
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																						
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
0	B	0-7	Interior	86	86	86	86	86	83	86	86	80	86	86	67	86	84	57	86	80	49	86	72	42	83	55	36	72	44	31	57	37	26	46	33	23	40	29	20	35	25	18
			Exposed	86	83	57	86	80	47	86	68	41	83	57	37	80	49	33	71	43	30	61	39	28	47	33	23	39	28	20	34	24	17	29	21	15	26	19	20	23	17	18
		7-20	Interior	86	86	85	86	86	81	86	84	69	86	80	56	86	67	47	83	56	41	80	48	37	65	38	31	53	33	27	44	28	23	38	25	20	33	22	18	29	19	16
			Exposed	86	67	46	82	54	40	77	44	36	67	39	32	59	35	29	52	32	27	46	29	24	38	25	21	33	21	18	28	18	15	25	16	20	22	14	18	19	19	16
		20-27	Interior	87	87	87	87	87	87	87	87	85	87	86	81	87	83	72	87	79	59	87	67	49	84	49	38	79	39	31	64	34	25	54	30	21	46	26	18	40	23	16
			Exposed	87	82	72	87	76	56	87	62	45	85	51	39	82	43	34	77	39	30	68	36	27	55	30	22	45	26	18	38	22	15	33	19	13	29	17	12	26	15	16
		27-45	Interior	87	87	87	87	87	87	87	87	87	87	87	85	87	87	82	87	86	76	87	83	64	83	71	48	71	55	39	53	43	32	42	37	27	37	33	24	33	29	20
			Exposed	87	87	81	87	85	72	87	82	60	84	74	50	80	63	43	70	53	38	58	46	34	42	38	28	36	32	23	31	28	19	27	24	17	24	22	14	21	19	12
	C	0-7	Interior	86	86	64	86	82	53	86	76	44	86	64	39	82	55	36	79	48	32	68	42	30	52	35	25	42	30	21	36	26	19	31	23	16	28	20	14	25	18	19
			Exposed	82	55	35	76	46	32	64	40	28	54	36	26	47	33	23	41	30	21	38	27	19	32	23	16	27	20	14	23	17	18	21	15	16	18	20	14	16	18	~~13~~
		7-20	Interior	86	77	53	84	61	43	81	50	38	74	42	35	64	38	31	57	35	29	50	32	26	41	27	22	35	23	19	30	20	16	26	17	14	23	15	19	21	20	17
			Exposed	64	38	31	55	34	28	48	30	25	42	27	23	38	25	20	35	23	19	32	21	17	27	17	14	23	15	19	20	20	16	17	17	14	15	15	~~12~~	20	~~13~~	~~11~~
		20-27	Interior	87	85	80	87	81	65	87	71	52	87	58	43	84	49	37	81	42	33	75	38	29	60	32	24	49	28	19	41	24	16	36	21	14	31	18	13	28	16	17
			Exposed	84	48	37	80	41	32	71	37	28	62	33	24	54	30	22	48	27	19	43	25	17	36	21	14	31	18	12	27	16	16	23	14	14	21	18	12	18	16	~~11~~
		27-45	Interior	87	87	84	87	87	80	87	84	68	86	80	56	83	71	48	80	60	41	67	52	37	48	40	30	39	35	25	33	30	21	29	26	18	26	23	16	23	21	13
			Exposed	83	70	47	77	58	40	61	48	35	50	41	31	42	38	28	38	34	25	35	31	22	30	26	18	25	23	15	22	20	13	19	17	17	17	15	14	15	20	12
	D	0-7	Interior	86	80	48	86	68	41	83	57	36	80	49	33	69	42	30	60	38	27	52	35	25	41	30	21	35	25	18	30	22	15	26	19	21	23	17	18	21	15	16
			Exposed	69	42	30	57	38	26	48	34	24	42	30	21	38	28	19	34	25	18	32	23	16	27	19	14	23	17	18	20	14	15	17	19	~~13~~	15	17	~~12~~	20	15	~~10~~
		7-20	Interior	82	54	40	77	44	36	66	39	32	58	35	29	51	32	26	45	29	24	41	26	22	34	22	18	29	19	16	25	17	14	22	14	18	20	19	16	17	17	14
			Exposed	51	32	26	44	28	23	39	25	21	35	23	19	32	21	17	29	19	16	26	17	14	22	15	18	19	19	16	17	16	14	14	14	~~12~~	19	~~13~~	~~10~~	17	~~11~~	9
		20-27	Interior	87	77	57	87	62	46	85	51	39	81	42	34	76	38	30	67	35	26	59	32	23	48	27	19	40	23	16	34	20	14	30	18	12	26	15	16	23	14	14
			Exposed	75	38	30	65	34	25	56	31	22	49	28	19	43	25	17	39	23	16	36	21	14	30	18	12	26	15	16	22	20	14	20	17	~~12~~	17	15	~~10~~	15	~~14~~	9
		27-45	Interior	87	85	73	87	82	60	84	74	50	80	62	42	68	52	37	56	45	33	47	40	30	38	34	25	32	29	20	28	25	17	25	22	15	22	19	13	19	17	17
			Exposed	67	52	37	53	43	32	43	38	28	39	35	25	35	32	22	32	29	20	29	26	18	25	22	15	21	19	12	18	16	16	16	14	14	14	19	12	19	17	~~10~~
10	B	0-7	Interior	62	62	62	62	62	62	62	62	62	62	62	62	62	62	57	62	62	49	62	62	42	62	55	36	62	44	31	57	37	26	46	33	23	40	29	20	35	25	18
			Exposed	62	62	57	62	62	47	62	62	41	62	57	37	62	49	33	62	43	30	61	39	28	47	33	23	39	28	20	34	24	17	29	21	15	26	19	20	23	17	18
		7-20	Interior	63	63	63	63	63	63	63	63	63	63	63	56	63	63	47	63	56	41	63	48	37	63	38	31	53	33	27	44	28	23	38	25	20	33	22	18	29	19	16
			Exposed	63	63	46	63	54	40	63	44	36	63	39	32	59	35	29	52	32	27	46	29	24	38	25	21	33	21	18	28	18	15	25	16	20	22	14	18	19	19	16
		20-27	Interior	82	82	82	82	82	82	82	82	82	82	82	81	82	82	72	82	79	59	82	67	49	82	49	38	79	39	31	64	34	25	54	30	21	46	26	18	40	23	16
			Exposed	82	82	72	82	76	56	82	62	45	82	51	39	82	43	34	77	39	30	68	36	27	55	30	22	45	26	18	38	22	15	33	19	13	29	17	12	26	15	16
		27-45	Interior	86	86	86	86	86	86	86	86	86	86	86	85	86	86	82	86	86	76	86	83	64	83	71	48	71	55	39	53	43	32	42	37	27	37	33	24	33	29	20
			Exposed	86	86	81	86	85	72	86	82	60	84	74	50	80	63	43	70	53	38	58	46	34	42	38	28	36	32	23	31	28	19	27	24	17	24	22	14	21	19	12
	C	0-7	Interior	62	62	62	62	62	53	62	62	44	62	62	39	62	55	36	62	48	32	62	42	30	52	35	25	42	30	21	36	26	19	31	23	16	28	20	14	25	18	19
			Exposed	62	55	35	62	46	32	62	40	28	54	36	26	47	33	23	41	30	21	38	27	19	32	23	16	27	20	14	23	17	18	21	15	16	18	20	14	16	18	~~13~~
		7-20	Interior	63	63	53	63	61	43	63	50	38	63	42	35	63	38	31	57	35	29	50	32	26	41	27	22	35	23	19	30	20	16	26	17	14	23	15	19	21	20	17
			Exposed	63	38	31	55	34	28	48	30	25	42	27	23	38	25	20	35	23	19	32	21	17	27	17	14	23	15	19	20	20	16	17	17	14	15	15	~~12~~	20	~~13~~	~~11~~
		20-27	Interior	82	82	80	82	81	65	82	71	52	82	58	43	82	49	37	81	42	33	75	38	29	60	32	24	49	28	19	41	24	16	36	21	14	31	18	13	28	16	17
			Exposed	82	48	37	80	41	32	71	37	28	62	33	24	54	30	22	48	27	19	43	25	17	36	21	14	31	18	12	27	16	16	23	14	14	21	18	12	18	16	~~11~~
		27-45	Interior	86	86	84	86	86	80	86	84	68	86	80	56	83	71	48	80	60	41	67	52	37	48	40	30	39	35	25	33	30	21	29	26	18	26	23	16	23	21	13
			Exposed	83	70	47	77	58	40	61	48	35	50	41	31	42	38	28	38	34	25	35	31	22	30	26	18	25	23	15	22	20	13	19	17	17	17	15	14	15	20	12
	D	0-7	Interior	62	62	48	62	62	41	62	57	36	62	49	33	62	42	30	60	38	27	52	35	25	41	30	21	35	25	18	30	22	15	26	19	21	23	17	18	21	15	16
			Exposed	62	42	30	57	38	26	48	34	24	42	30	21	38	28	19	34	25	18	32	23	16	27	19	14	23	17	18	20	14	15	17	19	~~13~~	15	17	~~12~~	20	15	~~10~~
		7-20	Interior	63	54	40	63	44	36	63	39	32	58	35	29	51	32	26	45	29	24	41	26	22	34	22	18	29	19	16	25	17	14	22	14	18	20	19	16	17	17	14
			Exposed	51	32	26	44	28	23	39	25	21	35	23	19	32	21	17	29	19	16	26	17	14	22	15	18	19	19	16	17	16	14	14	14	~~12~~	19	~~13~~	~~10~~	17	~~11~~	9
		20-27	Interior	84	77	57	84	62	46	84	51	39	81	42	34	76	38	30	67	35	26	59	32	23	48	27	19	40	23	16	34	20	14	30	18	12	26	15	16	23	14	14
			Exposed	75	38	30	65	34	25	56	31	22	49	28	19	43	25	17	39	23	16	36	21	14	30	18	12	26	15	16	22	20	14	20	17	~~12~~	17	15	~~10~~	15	~~14~~	9
		27-45	Interior	87	85	73	87	82	60	84	74	50	80	62	42	68	52	37	56	45	33	47	40	30	38	34	25	32	29	20	28	25	17	25	22	15	22	19	13	19	17	17
			Exposed	67	52	37	53	43	32	43	38	28	39	35	25	35	32	22	32	29	20	29	26	18	25	22	15	21	19	12	18	16	16	16	14	14	14	19	12	19	17	~~10~~
20	B	0-7	Interior	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	42	43	43	36	43	43	31	43	37	26	43	33	23	40	29	20	35	25	18
			Exposed	43	43	43	43	43	43	43	43	41	43	43	37	43	43	33	43	43	30	43	39	28	43	33	23	39	28	20	34	24	17	29	21	15	26	19	20	23	17	18
		7-20	Interior	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	41	44	44	37	44	38	31	44	33	27	44	28	23	38	25	20	33	22	18	29	19	16
			Exposed	44	44	44	44	44	40	44	44	36	44	39	32	44	35	29	44	32	27	44	29	24	38	25	21	33	21	18	28	18	15	25	16	20	22	14	18	19	19	16
		20-27	Interior	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	59	65	65	49	65	49	38	65	39	31	64	34	25	54	30	21	46	26	18	40	23	16
			Exposed	65	65	65	65	65	56	65	62	45	65	51	39	65	43	34	65	39	30	65	36	27	55	30	22	45	26	18	38	22	15	33	19	13	29	17	12	26	15	16
		27-45	Interior	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	64	72	71	48	71	55	39	53	43	32	42	37	27	37	33	24	33	29	20
			Exposed	72	72	72	72	72	72	72	72	60	72	72	50	72	63	43	70	53	38	58	46	34	42	38	28	36	32	23	31	28	19	27	24	17	24	22	14	21	19	12
	C	0-7	Interior	43	43	43	43	43	43	43	43	43	43	43	39	43	43	36	43	43	32	43	42	30	43	35	25	42	30	21	36	26	19	31	23	16	28	20	14	25	18	19
			Exposed	43	43	35	43	43	32	43	40	28	43	36	26	43	33	23	41	30	21	38	27	19	32	23	16	27	20	14	23	17	18	21	15	16	18	20	14	16	18	~~13~~
		7-20	Interior	44	44	44	44	44	43	44	44	38	44	42	35	44	38	31	44	35	29	44	32	26	41	27	22	35	23	19	30	20	16	26	17	14	23	15	19	21	20	17
			Exposed	44	38	31	44	34	28	44	30	25	42	27	23	38	25	20	35	23	19	32	21	17	27	17	14	23	15	19	20	20	16	17	17	14	15	15	~~12~~	20	~~13~~	~~11~~
		20-27	Interior	65	65	65	65	65	65	65	65	52	65	58	43	65	49	37	65	42	33	65	38	29	60	32	24	49	28	19	41	24	16	36	21	14	31	18	13	28	16	17
			Exposed	65	48	37	65	41	32	65	37	28	62	33	24	54	30	22	48	27	19	43	25	17	36	21	14	31	18	12	27	16	16	23	14	14	21	18	12	18	16	~~11~~
		27-45	Interior	72	72	72	72	72	72	72	72	68	72	72	56	72	71	48	72	60	41	67	52	37	48	40	30	39	35	25	33	30	21	29	26	18	26	23	16	23	21	13
			Exposed	72	70	47	72	58	40	61	48	35	50	41	31	42	38	28	38	34	25	35	31	22	30	26	18	25	23	15	22	20	13	19	17	17	17	15	14	15	20	12
	D	0-7	Interior	43	43	43	43	43	41	43	43	36	43	43	33	43	42	30	43	38	27	43	35	25	41	30	21	35	25	18	30	22	15	26	19	21	23	17	18	21	15	16
			Exposed	43	42	30	43	38	26	43	34	24	42	30	21	38	28	19	34	25	18	32	23	16	27	19	14	23	17	18	20	14	15	17	19	~~13~~	15	17	~~12~~	20	15	~~10~~
		7-20	Interior	44	44	40	44	44	36	44	39	32	44	35	29	44	32	26	44	29	24	41	26	22	34	22	18	29	19	16	25	17	14	22	14	18	20	19	16	17	17	14
			Exposed	44	32	26	44	28	23	39	25	21	35	23	19	32	21	17	29	19	16	26	17	14	22	15	18	19	19	16	17	16	14	14	14	~~12~~	19	~~13~~	~~10~~	17	~~11~~	9
		20-27	Interior	67	67	57	67	62	46	67	51	39	67	42	34	67	38	30	67	35	26	59	32	23	48	27	19	40	23	16	34	20	14	30	18	12	26	15	16	23	14	14
			Exposed	67	38	30	65	34	25	56	31	22	49	28	19	43	25	17	39	23	16	36	21	14	30	18	12	26	15	16	22	20	14	20	17	~~12~~	17	15	~~10~~	15	~~14~~	9
		27-45	Interior	75	75	73	75	75	60	75	74	50	75	62	42	68	52	37	56	45	33	47	40	30	38	34	25	32	29	20	28	25	17	25	22	15	22	19	13	19	17	17
			Exposed	67	52	37	53	43	32	43	38	28	39	35	25	35	32	22	32	29	20	29	26	18	25	22	15	21	19	12	18	16	16	16	14	14	14	19	12	19	17	~~10~~

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 1.25	19 sq.ft	PORTRAIT	CROSS-SLOPE	NXT	NXT COMBO	Solarhooks CT2
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																						
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
30	B	0-7	Interior	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	36	42	42	31	42	37	26	42	33	23	40	29	20	35	25	18
			Exposed	42	42	42	42	42	42	42	42	41	42	42	37	42	42	33	42	42	30	42	39	28	42	33	23	39	28	20	34	24	17	29	21	15	26	19	20	23	17	18
		7-20	Interior	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	41	44	44	37	44	38	31	44	33	27	44	28	23	38	25	20	33	22	18	29	19	16
			Exposed	44	44	44	44	44	40	44	44	36	44	39	32	44	35	29	44	32	27	44	29	24	38	25	21	33	21	18	28	18	15	25	16	20	22	14	18	19	19	16
		20-27	Interior	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	49	53	49	38	53	39	31	53	34	25	53	30	21	46	26	18	40	23	16
			Exposed	53	53	53	53	53	53	53	53	45	53	51	39	53	43	34	53	39	30	53	36	27	53	30	22	45	26	18	38	22	15	33	19	13	29	17	12	26	15	16
		27-45	Interior	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	48	58	55	39	53	43	32	42	37	27	37	33	24	33	29	20
			Exposed	61	61	61	61	61	61	61	61	60	61	61	50	61	61	43	61	53	38	58	46	34	42	38	28	36	32	23	31	28	19	27	24	17	24	22	14	21	19	12
	C	0-7	Interior	42	42	42	42	42	42	42	42	42	42	42	39	42	42	36	42	42	32	42	42	30	42	35	25	42	30	21	36	26	19	31	23	16	28	20	14	25	18	19
			Exposed	42	42	35	42	42	32	42	40	28	42	36	26	42	33	23	41	30	21	38	27	19	32	23	16	27	20	14	23	17	18	21	15	16	18	20	14	16	18	~~13~~
		7-20	Interior	44	44	44	44	44	43	44	44	38	44	42	35	44	38	31	44	35	29	44	32	26	41	27	22	35	23	19	30	20	16	26	17	14	23	15	19	21	20	17
			Exposed	44	38	31	44	34	28	44	30	25	42	27	23	38	25	20	35	23	19	32	21	17	27	17	14	23	15	19	20	20	16	17	17	14	15	15	~~12~~	20	~~13~~	~~11~~
		20-27	Interior	53	53	53	53	53	53	53	53	52	53	53	43	53	49	37	53	42	33	53	38	29	53	32	24	49	28	19	41	24	16	36	21	14	31	18	13	28	16	17
			Exposed	53	48	37	53	41	32	53	37	28	53	33	24	53	30	22	48	27	19	43	25	17	36	21	14	31	18	12	27	16	16	23	14	14	21	18	12	18	16	~~11~~
		27-45	Interior	61	61	61	61	61	61	61	61	61	61	61	56	61	61	48	60	60	41	57	52	37	48	40	30	39	35	25	33	30	21	29	26	18	26	23	16	23	21	13
			Exposed	61	61	47	61	58	40	61	48	35	50	41	31	42	38	28	38	34	25	35	31	22	30	26	18	25	23	15	22	20	13	19	17	17	17	15	14	15	20	12
	D	0-7	Interior	43	43	43	43	43	41	43	43	36	43	43	33	43	42	30	43	38	27	43	35	25	41	30	21	35	25	18	30	22	15	26	19	21	23	17	18	21	15	16
			Exposed	43	42	30	43	38	26	43	34	24	42	30	21	38	28	19	34	25	18	32	23	16	27	19	14	23	17	18	20	14	15	17	19	~~13~~	15	17	~~12~~	20	15	~~10~~
		7-20	Interior	44	44	40	44	44	36	44	39	32	44	35	29	44	32	26	44	29	24	41	26	22	34	22	18	29	19	16	25	17	14	22	14	18	20	19	16	17	17	14
			Exposed	44	32	26	44	28	23	39	25	21	35	23	19	32	21	17	29	19	16	26	17	14	22	15	18	19	19	16	17	16	14	14	14	~~12~~	19	~~13~~	~~10~~	17	~~11~~	9
		20-27	Interior	56	56	56	56	56	46	56	51	39	56	42	34	56	38	30	56	35	26	56	32	23	48	27	19	40	23	16	34	20	14	30	18	12	26	15	16	23	14	14
			Exposed	56	38	30	56	34	25	56	31	22	49	28	19	43	25	17	39	23	16	36	21	14	30	18	12	26	15	16	22	20	14	20	17	~~12~~	17	15	~~10~~	15	~~14~~	9
		27-45	Interior	64	64	64	64	64	60	64	64	50	64	62	42	61	52	37	56	45	33	47	40	30	38	34	25	32	29	20	28	25	17	25	22	15	22	19	13	19	17	17
			Exposed	64	52	37	53	43	32	43	38	28	39	35	25	35	32	22	32	29	20	29	26	18	25	22	15	21	19	12	18	16	16	16	14	14	14	19	12	19	17	~~10~~
40	B	0-7	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	31	35	35	26	35	33	23	35	29	20	35	25	18			
			Exposed	35	35	35	35	35	35	35	35	35	35	35	35	35	35	33	35	35	30	35	35	28	35	33	23	35	28	20	34	24	17	29	21	15	26	19	20	23	17	18
		7-20	Interior	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	31	37	33	27	37	28	23	37	25	20	33	22	18	29	19	16
			Exposed	37	37	37	37	37	37	37	37	36	37	37	32	37	35	29	37	32	27	37	29	24	37	25	21	33	21	18	28	18	15	25	16	20	22	14	18	19	19	16
		20-27	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	38	45	39	31	45	34	25	45	30	21	44	26	18	40	23	16
			Exposed	45	45	45	45	45	45	45	45	45	45	45	39	45	43	34	45	39	30	45	36	27	45	30	22	45	26	18	38	22	15	33	19	13	29	17	12	26	15	16
		27-45	Interior	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	48	49	49	39	46	43	32	42	37	27	37	33	24	33	29	20
			Exposed	52	52	52	52	52	52	52	52	52	52	52	50	52	52	43	52	52	38	52	46	34	42	38	28	36	32	23	31	28	19	27	24	17	24	22	14	21	19	12
	C	0-7	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	32	35	35	30	35	35	25	35	30	21	35	26	19	31	23	16	28	20	14	25	18	19
			Exposed	35	35	35	35	35	32	35	35	28	35	35	26	35	33	23	35	30	21	35	27	19	32	23	16	27	20	14	23	17	18	21	15	16	18	20	14	16	18	~~13~~
		7-20	Interior	37	37	37	37	37	37	37	37	37	37	37	35	37	37	31	37	35	29	37	32	26	37	27	22	35	23	19	30	20	16	26	17	14	23	15	19	21	20	17
			Exposed	37	37	31	37	34	28	37	30	25	37	27	23	37	25	20	35	23	19	32	21	17	27	17	14	23	15	19	20	20	16	17	17	14	15	15	~~12~~	20	~~13~~	~~11~~
		20-27	Interior	45	45	45	45	45	45	45	45	45	45	45	43	45	45	37	45	42	33	45	38	29	45	32	24	45	28	19	41	24	16	36	21	14	31	18	13	28	16	17
			Exposed	45	45	37	45	41	32	45	37	28	45	33	24	45	30	22	45	27	19	43	25	17	36	21	14	31	18	12	27	16	16	23	14	14	21	18	12	18	16	~~11~~
		27-45	Interior	52	52	52	52	52	52	52	52	52	52	52	52	52	52	48	51	51	41	49	49	37	45	40	30	39	35	25	33	30	21	29	26	18	26	23	16	23	21	13
			Exposed	52	52	47	52	52	40	52	48	35	50	41	31	42	38	28	38	34	25	35	31	22	30	26	18	25	23	15	22	20	13	19	17	17	17	15	14	15	20	12
	D	0-7	Interior	37	37	37	37	37	37	37	37	36	37	37	33	37	37	30	37	37	27	37	35	25	37	30	21	35	25	18	30	22	15	26	19	21	23	17	18	21	15	16
			Exposed	37	37	30	37	37	26	37	34	24	37	30	21	37	28	19	34	25	18	32	23	16	27	19	14	23	17	18	20	14	15	17	19	~~13~~	15	17	~~12~~	20	15	~~10~~
		7-20	Interior	40	40	40	40	40	36	40	39	32	40	35	29	40	32	26	40	29	24	40	26	22	34	22	18	29	19	16	25	17	14	22	14	18	20	19	16	17	17	14
			Exposed	40	32	26	40	28	23	39	25	21	35	23	19	32	21	17	29	19	16	26	17	14	22	15	18	19	19	16	17	16	14	14	14	~~12~~	19	~~13~~	~~10~~	17	~~11~~	9
		20-27	Interior	48	48	48	48	48	46	48	48	39	48	42	34	48	38	30	48	35	26	48	32	23	48	27	19	40	23	16	34	20	14	30	18	12	26	15	16	23	14	14
			Exposed	48	38	30	48	34	25	48	31	22	48	28	19	43	25	17	39	23	16	36	21	14	30	18	12	26	15	16	22	20	14	20	17	~~12~~	17	15	~~10~~	15	~~14~~	9
		27-45	Interior	55	55	55	55	55	55	55	55	50	54	54	42	52	52	37	50	45	33	47	40	30	38	34	25	32	29	20	28	25	17	25	22	15	22	19	13	19	17	17
			Exposed	55	52	37	53	43	32	43	38	28	39	35	25	35	32	22	32	29	20	29	26	18	25	22	15	21	19	12	18	16	16	16	14	14	14	19	12	19	17	~~10~~
50	B	0-7	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	26	28	28	23	28	28	20	28	25	18
			Exposed	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	23	28	28	20	28	24	17	28	21	15	26	19	20	23	17	18
		7-20	Interior	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	27	31	28	23	31	25	20	31	22	18	29	19	16
			Exposed	31	31	31	31	31	31	31	31	31	31	31	31	31	31	29	31	31	27	31	29	24	31	25	21	31	21	18	28	18	15	25	16	20	22	14	18	19	19	16
		20-27	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	38	39	39	31	39	34	25	39	30	21	38	26	18	37	23	16
			Exposed	39	39	39	39	39	39	39	39	39	39	39	39	39	39	34	39	39	30	39	36	27	39	30	22	39	26	18	38	22	15	33	19	13	29	17	12	26	15	16
		27-45	Interior	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	45	45	45	43	43	39	41	41	32	39	37	27	37	33	24	33	29	20
			Exposed	46	46	46	46	46	46	46	46	46	46	46	46	46	46	43	46	46	38	46	46	34	42	38	28	36	32	23	31	28	19	27	24	17	24	22	14	21	19	12
	C	0-7	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	25	28	28	21	28	26	19	28	23	16	28	20	14	25	18	19
			Exposed	28	28	28	28	28	28	28	28	28	28	28	26	28	28	23	28	28	21	28	27	19	28	23	16	27	20	14	23	17	18	21	15	16	18	20	14	16	18	~~13~~
		7-20	Interior	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	29	31	31	26	31	27	22	31	23	19	30	20	16	26	17	14	23	15	19	21	20	17
			Exposed	31	31	31	31	31	28	31	30	25	31	27	23	31	25	20	31	23	19	31	21	17	27	17	14	23	15	19	20	20	16	17	17	14	15	15	~~12~~	20	~~13~~	~~11~~
		20-27	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	37	39	39	33	39	38	29	39	32	24	39	28	19	37	24	16	36	21	14	31	18	13	28	16	17
			Exposed	39	39	37	39	39	32	39	37	28	39	33	24	39	30	22	39	27	19	39	25	17	36	21	14	31	18	12	27	16	16	23	14	14	21	18	12	18	16	~~11~~
		27-45	Interior	46	46	46	46	46	46	46	46	46	46	46	45	45	45	44	44	41	42	42	37	40	40	30	37	35	25	33	30	21	29	26	18	26	23	16	23	21	13
			Exposed	46	46	46	46	46	40	46	46	35	46	41	31	42	38	28	38	34	25	35	31	22	30	26	18	25	23	15	22	20	13	19	17	17	17	15	14	15	20	12
	D	0-7	Interior	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	31	31	27	31	31	25	31	30	21	31	25	18	30	22	15	26	19	21	23	17	18	21	15	16
			Exposed	31	31	30	31	31	26	31	31	24	31	30	21	31	28	19	31	25	18	31	23	16	27	19	14	23	17	18	20	14	15	17	19	~~13~~	15	17	~~12~~	20	15	~~10~~
		7-20	Interior	34	34	34	34	34	34	34	34	32	34	34	29	34	32	26	34	29	24	34	26	22	33	22	18	29	19	16	25	17	14	22	14	18	20	19	16	17	17	14
			Exposed	34	32	26	34	28	23	34	25	21	34	23	19	32	21	17	29	19	16	26	17	14	22	15	18	19	19	16	17	16	14	14	14	~~12~~	19	~~13~~	~~10~~	17	~~11~~	9
		20-27	Interior	42	42	42	42	42	42	42	42	39	42	42	34	42	38	30	42	35	26	42	32	23	41	27	19	39	23	16	34	20	14	30	18	12	26	15	16	23	14	14
			Exposed	42	38	30	42	34	25	42	31	22	42	28	19	42	25	17	39	23	16	36	21	14	30	18	12	26	15	16	22	20	14	20	17	~~12~~	17	15	~~10~~	15	~~14~~	9
		27-45	Interior	49	49	49	49	49	49	49	49	49	47	47	42	45	45	37	44	44	33	42	40	30	38	34	25	32	29	20	28	25	17	25	22	15	22	19	13	19	17	17
			Exposed	49	49	37	49	43	32	43	38	28	39	35	25	35	32	22	32	29	20	29	26	18	25	22	15	21	19	12	18	16	16	16	14	14	14	19	12	19	17	~~10~~

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 1.25	19 sq.ft	PORTRAIT	CROSS-SLOPE	NXT	NXT COMBO	Solarhooks CT2
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																								
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																								
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
60	B	0-7	Interior	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	24	24	20	24	24	18
			Exposed	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	24	24	20	24	24	17	24	21	15	24	19	20	23	17	18
		7-20	Interior	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	23	26	25	20	26	22	18	26	19	16
			Exposed	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	25	21	26	21	18	26	18	15	25	16	20	22	14	18	19	19	16
		20-27	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	31	35	34	25	35	30	21	34	26	18	33	23	16
			Exposed	35	35	35	35	35	35	35	35	35	35	35	35	35	35	34	35	35	30	35	35	27	35	30	22	35	26	18	35	22	15	33	19	13	29	17	12	26	15	16
		27-45	Interior	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	40	40	40	39	39	39	37	37	32	35	35	27	33	33	24	32	29	20
			Exposed	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	38	41	41	34	40	38	28	36	32	23	31	28	19	27	24	17	24	22	14	21	19	12
	C	0-7	Interior	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	21	24	24	19	24	23	16	24	20	14	24	18	19
			Exposed	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	24	24	21	24	24	19	24	23	16	24	20	14	23	17	18	21	15	16	18	20	14	16	18	13
		7-20	Interior	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	22	26	23	19	26	20	16	25	17	14	23	15	19	21	20	17
			Exposed	26	26	26	26	26	26	26	26	25	26	26	23	26	25	20	26	23	19	26	21	17	26	17	14	23	15	19	20	20	16	17	17	14	15	15	12	20	13	11
		20-27	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	33	35	35	29	35	32	24	34	28	19	33	24	16	32	21	14	30	18	13	28	16	17
			Exposed	35	35	35	35	35	32	35	35	28	35	33	24	35	30	22	35	27	19	35	25	17	35	21	14	31	18	12	27	16	16	23	14	14	21	18	12	18	16	11
		27-45	Interior	41	41	41	41	41	41	41	41	41	41	41	41	40	40	40	39	39	39	38	38	37	36	36	30	34	34	25	32	30	21	29	26	18	26	23	16	23	21	13
			Exposed	41	41	41	41	41	40	41	41	35	41	41	31	40	38	28	38	34	25	35	31	22	30	26	18	25	23	15	22	20	13	19	17	17	17	15	14	15	20	12
	D	0-7	Interior	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	25	26	26	21	26	25	18	26	22	15	26	19	21	23	17	18	21	15	16
			Exposed	26	26	26	26	26	26	26	26	24	26	26	21	26	26	19	26	25	18	26	23	16	26	19	14	23	17	18	20	14	15	17	19	13	15	17	12	20	15	10
		7-20	Interior	29	29	29	29	29	29	29	29	29	29	29	29	29	29	26	29	29	24	29	26	22	29	22	18	28	19	16	25	17	14	22	14	18	20	19	16	17	17	14
			Exposed	29	29	26	29	28	23	29	25	21	29	23	19	29	21	17	29	19	16	26	17	14	22	15	18	19	19	16	17	16	14	14	14	12	19	13	10	17	11	9
		20-27	Interior	37	37	37	37	37	37	37	37	37	37	37	34	37	37	30	37	35	26	37	32	23	37	27	19	35	23	16	33	20	14	30	18	12	26	15	16	23	14	14
			Exposed	37	37	30	37	34	25	37	31	22	37	28	19	37	25	17	37	23	16	36	21	14	30	18	12	26	15	16	22	20	14	20	17	12	17	15	10	15	14	9
		27-45	Interior	44	44	44	44	44	44	43	43	43	42	42	42	41	41	37	39	39	33	38	38	30	36	34	25	32	29	20	28	25	17	25	22	15	22	19	13	19	17	17
			Exposed	44	44	37	44	43	32	43	38	28	39	35	25	35	32	22	32	29	20	29	26	18	25	22	15	21	19	12	18	16	16	16	14	14	14	19	12	19	17	10
70	B	0-7	Interior	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	20	21	21	18
			Exposed	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	20	21	21	17	21	21	15	21	19	20	21	17	18
		7-20	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	20	22	22	18	22	19	16
			Exposed	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	21	22	21	18	22	18	15	22	16	20	22	14	18	19	19	16
		20-27	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	25	30	30	21	30	26	18	29	23	16
			Exposed	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	27	30	30	22	30	26	18	30	22	15	30	19	13	29	17	12	26	15	16
		27-45	Interior	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	35	35	35	34	34	32	32	32	27	31	31	24	29	29	20
			Exposed	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	34	37	37	28	35	32	23	31	28	19	27	24	17	24	22	14	21	19	12
	C	0-7	Interior	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	19	21	21	16	21	20	14	21	18	19
			Exposed	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	19	21	21	16	21	20	14	21	17	18	21	15	16	18	20	14	16	18	13
		7-20	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	19	22	20	16	22	17	14	22	15	19	21	20	17
			Exposed	22	22	22	22	22	22	22	22	22	22	22	22	22	22	20	22	22	19	22	21	17	22	17	14	22	15	19	20	20	16	17	17	14	15	15	12	20	13	11
		20-27	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	24	30	28	19	29	24	16	28	21	14	27	18	13	26	16	17
			Exposed	30	30	30	30	30	30	30	30	28	30	30	24	30	30	22	30	27	19	30	25	17	30	21	14	30	18	12	27	16	16	23	14	14	21	18	12	18	16	11
		27-45	Interior	37	37	37	37	37	37	37	37	37	37	37	36	36	36	36	36	36	35	35	35	35	33	33	30	31	31	25	30	30	21	28	26	18	26	23	16	23	21	13
			Exposed	37	37	37	37	37	37	37	37	35	37	37	31	36	36	28	36	34	25	35	31	22	30	26	18	25	23	15	22	20	13	19	17	17	17	15	14	15	20	12
	D	0-7	Interior	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	21	23	23	18	23	22	15	23	19	21	23	17	18	21	15	16
			Exposed	23	23	23	23	23	23	23	23	23	23	23	21	23	23	19	23	23	18	23	23	16	23	19	14	23	17	18	20	14	15	17	19	13	15	17	12	20	15	10
		7-20	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	24	25	25	22	25	22	18	25	19	16	24	17	14	22	14	18	20	19	16	17	17	14
			Exposed	25	25	25	25	25	23	25	25	21	25	23	19	25	21	17	25	19	16	25	17	14	22	15	18	19	19	16	17	16	14	14	14	12	19	13	10	17	11	9
		20-27	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	30	33	33	26	33	32	23	33	27	19	31	23	16	30	20	14	29	18	12	26	15	16	23	14	14
			Exposed	33	33	30	33	33	25	33	31	22	33	28	19	33	25	17	33	23	16	33	21	14	30	18	12	26	15	16	22	20	14	20	17	12	17	15	10	15	14	9
		27-45	Interior	40	40	40	40	40	40	39	39	39	38	38	38	37	37	37	36	36	33	35	35	30	33	33	25	31	29	20	28	25	17	25	22	15	22	19	13	19	17	17
			Exposed	40	40	37	40	40	32	39	38	28	38	35	25	35	32	22	32	29	20	29	26	18	25	22	15	21	19	12	18	16	16	16	14	14	14	19	12	19	17	10
80	B	0-7	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	17	18	18	15	18	18	20	18	17	18
		7-20	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	18	20	19	16
			Exposed	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	18	20	18	15	20	16	20	20	14	18	19	19	16
		20-27	Interior	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	25	27	27	21	27	26	18	27	23	16
			Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	22	27	26	18	27	22	15	27	19	13	27	17	12	26	15	16
		27-45	Interior	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	33	33	33	32	32	32	31	31	31	30	30	27	28	28	24	27	27	20
			Exposed	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	33	33	28	32	32	23	31	28	19	27	24	17	24	22	14	21	19	12
	C	0-7	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	16	18	18	14	18	18	19
			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	16	18	18	14	18	17	18	18	15	16	18	20	14	16	18	13
		7-20	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	19	20	20	16	20	17	14	20	15	19	19	20	17
			Exposed	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	19	20	20	17	20	17	14	20	15	19	20	20	16	17	17	14	15	15	12	20	13	11
		20-27	Interior	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	24	27	27	19	27	24	16	26	21	14	25	18	13	24	16	17
			Exposed	27	27	27	27	27	27	27	27	27	27	27	24	27	27	22	27	27	19	27	25	17	27	21	14	27	18	12	27	16	16	23	14	14	21	18	12	18	16	11
		27-45	Interior	34	34	34	34	34	34	34	34	34	34	34	34	33	33	33	33	33	33	32	32	32	30	30	30	29	29	25	28	28	21	26	26	18	25	23	16	23	21	13
			Exposed	34	34	34	34	34	34	34	34	34	34	34	31	33	33	28	33	33	25	32	31	22	30	26	18	25	23	15	22	20	13	19	17	17	17	15	14	15	20	12
	D	0-7	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	18	20	20	15	20	19	21	20	17	18	20	15	16
			Exposed	20	20	20	20	20	20	20	20	20	20	20	20	20	20	19	20	20	18	20	20	16	20	19	14	20	17	18	20	14	15	17	19	13	15	17	12	20	15	10
		7-20	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	18	22	19	16	22	17	14	21	14	18	20	19	16	17	17	14
			Exposed	22	22	22	22	22	22	22	22	21	22	22	19	22	21	17	22	19	16	22	17	14	22	15	18	19	19	16	17	16	14	14	14	12	19	13	10	17	11	9
		20-27	Interior	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	26	29	29	23	29	27	19	29	23	16	28	20	14	26	18	12	25	15	16	23	14	14
			Exposed	29	29	29	29	29	25	29	29	22	29	28	19	29	25	17	29	23	16	29	21	14	29	18	12	26	15	16	22	20	14	20	17	12	17	15	10	15	14	9
		27-45	Interior	36	36	36	36	36	36	36	36	36	35	35	35	34	34	34	33	33	33	32	32	30	31	31	25	29	29	20	27	25	17	25	22	15	22	19	13	19	17	17
			Exposed	36	36	36	36	36	32	36	36	28	35	35	25	34	32	22	32	29	20	29	26	18	25	22	15	21	19	12	18	16	16	16	14	14	14	19	12	19	17	10

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 1.25	19 sq.ft	PORTRAIT	CROSS-SLOPE	NXT	NXT COMBO	Solarhooks CT2
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																						
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
90	B	0-7	Interior	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
			Exposed	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	15	16	16	20	16	16	18
		7-20	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	16
			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	15	18	16	20	18	14	18	18	19	16
		20-27	Interior	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	21	24	24	18	24	23	16
			Exposed	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	22	24	24	18	24	22	15	24	19	13	24	17	12	24	15	16
		27-45	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	29	29	27	27	27	26	26	24	25	25	20
			Exposed	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	28	30	30	23	29	28	19	27	24	17	24	22	14	21	19	12
	C	0-7	Interior	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	14	16	16	19
			Exposed	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	14	16	16	18	16	15	16	16	20	14	16	18	~~13~~
		7-20	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	16	18	17	14	18	15	19	18	20	17
			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	17	18	17	14	18	15	19	18	20	16	17	17	14	15	15	~~12~~	20	~~13~~	~~11~~
		20-27	Interior	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	19	24	24	16	24	21	14	23	18	13	22	16	17
			Exposed	24	24	24	24	24	24	24	24	24	24	24	24	24	24	22	24	24	19	24	24	17	24	21	14	24	18	12	24	16	16	23	14	14	21	18	12	18	16	~~11~~
		27-45	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	29	29	28	28	28	27	27	25	26	26	21	24	24	18	23	23	16	22	21	13
			Exposed	30	30	30	30	30	30	30	30	30	30	30	30	30	30	28	30	30	25	29	29	22	28	26	18	25	23	15	22	20	13	19	17	17	17	15	14	15	20	12
	D	0-7	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	15	18	18	21	18	17	18	18	15	16
			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	16	18	18	14	18	17	18	18	14	15	17	19	~~13~~	15	17	~~12~~	20	15	~~10~~
		7-20	Interior	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	18	19	19	16	19	17	14	19	14	18	19	19	16	17	17	14
			Exposed	19	19	19	19	19	19	19	19	19	19	19	19	19	19	17	19	19	16	19	17	14	19	15	18	19	19	16	17	16	14	14	14	~~12~~	19	~~13~~	~~10~~	17	~~11~~	9
		20-27	Interior	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	23	26	26	19	26	23	16	25	20	14	24	18	12	23	15	16	22	14	14
			Exposed	26	26	26	26	26	25	26	26	22	26	26	19	26	25	17	26	23	16	26	21	14	26	18	12	26	15	16	22	20	14	20	17	~~12~~	17	15	~~10~~	15	~~14~~	9
		27-45	Interior	33	33	33	33	33	33	33	33	33	32	32	32	32	32	32	31	31	31	30	30	30	28	28	25	27	27	20	26	25	17	24	22	15	22	19	13	19	17	17
			Exposed	33	33	33	33	33	32	33	33	28	32	32	25	32	32	22	31	29	20	29	26	18	25	22	15	21	19	12	18	16	16	16	14	14	14	19	12	19	17	~~10~~
100	B	0-7	Interior	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14
			Exposed	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	20	14	14	18
		7-20	Interior	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
			Exposed	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	15	16	16	20	16	14	18	16	19	16
		20-27	Interior	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	18	21	21	16
			Exposed	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	18	21	21	15	21	19	13	21	17	12	21	15	16
		27-45	Interior	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	26	26	26	25	25	24	24	24	20
			Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	23	27	27	19	26	24	17	24	22	14	21	19	12
	C	0-7	Interior	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	19
			Exposed	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	18	14	14	16	14	20	14	14	18	~~13~~
		7-20	Interior	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	14	16	15	19	16	20	17
			Exposed	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	14	16	15	19	16	20	16	16	17	14	15	15	~~12~~	20	~~13~~	~~11~~
		20-27	Interior	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	19	21	21	16	21	21	14	21	18	13	21	16	17
			Exposed	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	19	21	21	17	21	21	14	21	18	12	21	16	16	21	14	14	21	18	12	18	16	~~11~~
		27-45	Interior	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	26	26	26	25	25	25	24	24	21	23	23	18	22	22	16	21	21	13
			Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	25	27	27	22	26	26	18	25	23	15	22	20	13	19	17	17	17	15	14	15	20	12
	D	0-7	Interior	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	15	16	16	21	16	16	18	16	15	16
			Exposed	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	14	16	16	18	16	14	15	16	19	~~13~~	15	17	~~12~~	20	15	~~10~~
		7-20	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	16	18	17	14	18	14	18	17	19	16	17	17	14
			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	18	17	18	18	16	18	17	14	18	15	18	18	19	16	17	16	14	14	14	~~12~~	19	~~13~~	~~10~~	17	~~11~~	9
		20-27	Interior	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	24	24	19	24	23	16	23	20	14	23	18	12	22	15	16	21	14	14
			Exposed	24	24	24	24	24	24	24	24	22	24	24	19	24	24	17	24	23	16	24	21	14	24	18	12	24	15	16	22	20	14	20	17	~~12~~	17	15	~~10~~	15	~~14~~	9
		27-45	Interior	30	30	30	30	30	30	30	30	30	30	30	30	29	29	29	29	29	29	28	28	28	27	27	25	25	25	20	24	24	17	23	22	15	22	19	13	19	17	17
			Exposed	30	30	30	30	30	30	30	30	28	30	30	25	29	29	22	29	29	20	28	26	18	25	22	15	21	19	12	18	16	16	16	14	14	14	19	12	19	17	~~10~~

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 1.25	19 sq.ft	LANDSCAPE	CROSS-SLOPE	NXT	NXT COMBO	Solarhooks CT2
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																								
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																								
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
0	B	0-7	Interior	102	102	102	102	102	102	102	102	97	102	102	92	102	102	88	102	98	84	102	94	81	101	87	60	94	81	51	87	63	45	82	55	39	69	48	34	59	43	30
			Exposed	102	102	88	102	97	83	102	92	78	102	88	62	97	84	56	93	80	51	89	67	46	83	56	39	66	48	34	56	41	29	49	36	25	43	32	34	39	28	30
		7-20	Interior	102	102	102	102	102	100	102	102	94	102	98	89	102	93	85	102	89	81	99	85	63	90	64	53	84	55	45	79	48	39	64	42	34	56	37	30	50	32	27
			Exposed	102	93	84	102	88	80	96	83	60	91	69	54	87	60	49	84	54	45	81	50	41	64	42	35	55	36	30	48	31	26	42	27	34	37	24	30	32	32	27
		20-27	Interior	103	103	103	103	103	103	103	103	103	103	103	101	103	102	96	103	97	91	103	93	86	103	85	66	96	73	52	90	57	43	85	50	36	80	44	31	68	39	27
			Exposed	103	102	95	103	96	89	103	91	84	103	86	80	100	82	57	95	67	51	91	60	45	85	51	37	80	43	30	64	38	26	56	33	23	49	29	20	44	26	27
		27-45	Interior	103	103	103	103	103	103	103	103	103	103	103	103	103	103	100	103	103	96	103	102	91	103	94	84	95	87	69	88	81	54	82	63	46	62	55	40	55	49	35
			Exposed	103	103	100	103	103	94	103	100	89	103	95	85	99	91	81	94	87	65	90	83	57	82	63	47	61	54	39	53	47	33	46	41	28	41	36	24	36	32	21
	C	0-7	Interior	102	102	91	102	100	86	102	95	82	102	90	69	101	87	60	96	83	55	92	80	50	85	60	42	80	51	36	61	44	31	53	39	27	47	34	24	41	30	32
			Exposed	100	86	60	95	82	53	90	72	48	86	61	43	83	55	39	78	50	36	63	46	33	54	39	28	46	33	24	40	29	31	35	25	27	31	34	24	27	30	21
		7-20	Interior	102	97	88	102	91	83	102	86	65	94	82	58	90	64	53	86	58	48	83	53	44	72	45	37	59	39	32	51	33	28	45	29	24	39	26	32	35	23	29
			Exposed	89	64	53	85	57	47	82	51	42	75	46	38	64	42	35	58	38	32	53	35	29	45	30	24	39	25	32	33	33	27	29	29	24	26	26	21	35	23	19
		20-27	Interior	103	103	99	103	100	93	103	94	88	103	89	83	103	85	65	98	81	56	94	64	50	88	54	40	82	47	33	72	40	28	60	35	24	53	31	21	47	28	19
			Exposed	103	85	64	97	80	54	92	62	47	88	56	41	85	50	36	82	46	32	78	42	29	61	36	24	52	31	21	45	26	27	39	23	24	35	31	21	31	27	19
		27-45	Interior	103	103	103	103	103	98	103	103	93	103	98	88	103	94	84	98	90	80	93	86	63	85	79	51	65	58	42	56	51	36	49	44	30	43	39	26	39	35	23
			Exposed	103	94	84	97	89	80	91	84	59	86	80	52	82	63	47	64	58	42	59	53	38	50	45	31	43	38	26	37	33	22	32	29	19	29	26	24	25	23	21
	D	0-7	Interior	102	97	84	102	92	79	102	87	61	97	84	55	92	80	50	89	65	46	85	59	42	76	50	35	59	43	30	51	37	26	44	32	23	39	29	31	35	25	27
			Exposed	92	80	50	88	63	45	83	57	40	80	51	36	64	46	33	58	42	30	53	39	27	45	33	23	38	28	30	33	24	26	29	32	23	26	28	20	34	25	18
		7-20	Interior	102	88	80	96	83	60	90	67	54	87	59	49	83	54	44	80	49	40	71	45	37	58	38	31	49	32	27	43	28	23	37	25	31	33	33	27	29	29	24
			Exposed	83	53	44	79	48	39	66	43	35	59	39	32	54	35	29	49	32	26	45	29	24	38	25	31	32	32	27	28	28	23	25	24	20	33	21	18	29	19	16
		20-27	Interior	103	96	90	103	91	84	103	86	80	99	82	57	94	65	50	91	59	44	87	54	40	82	46	32	68	39	27	58	34	23	50	30	20	44	26	27	39	23	24
			Exposed	94	64	50	90	58	43	86	52	37	82	47	33	78	42	29	66	39	26	60	35	24	51	30	20	44	26	27	38	34	23	33	29	20	29	26	18	26	23	16
		27-45	Interior	103	103	95	103	100	90	103	95	85	99	90	81	94	86	64	89	82	56	85	76	50	64	57	41	55	49	34	47	42	29	41	37	25	37	33	21	32	29	19
			Exposed	94	86	63	88	81	55	83	65	48	65	58	42	59	53	38	54	48	34	49	44	31	42	37	25	36	32	21	31	28	27	27	24	23	24	33	20	32	29	18
10	B	0-7	Interior	91	91	91	91	91	91	91	91	91	91	91	91	91	91	88	91	91	84	91	91	81	91	87	60	91	81	51	87	63	45	82	55	39	69	48	34	59	43	30
			Exposed	91	91	88	91	91	83	91	91	78	91	88	62	91	84	56	91	80	51	89	67	46	83	56	39	66	48	34	56	41	29	49	36	25	43	32	34	39	28	30
		7-20	Interior	91	91	91	91	91	91	91	91	91	91	91	89	91	91	85	91	89	81	91	85	63	90	64	53	84	55	45	79	48	39	64	42	34	56	37	30	50	32	27
			Exposed	91	91	84	91	88	80	91	83	60	91	69	54	87	60	49	84	54	45	81	50	41	64	42	35	55	36	30	48	31	26	42	27	34	37	24	30	32	32	27
		20-27	Interior	100	100	100	100	100	100	100	100	100	100	100	100	100	100	96	100	97	91	100	93	86	100	85	66	96	73	52	90	57	43	85	50	36	80	44	31	68	39	27
			Exposed	100	100	95	100	96	89	100	91	84	100	86	80	100	82	57	95	67	51	91	60	45	85	51	37	80	43	30	64	38	26	56	33	23	49	29	20	44	26	27
		27-45	Interior	102	102	102	102	102	102	102	102	102	102	102	102	102	102	100	102	102	96	102	102	91	102	94	84	95	87	69	88	81	54	82	63	46	62	55	40	55	49	35
			Exposed	102	102	100	102	102	94	102	100	89	102	95	85	99	91	81	94	87	65	90	83	57	82	63	47	61	54	39	53	47	33	46	41	28	41	36	24	36	32	21
	C	0-7	Interior	91	91	91	91	91	86	91	91	82	91	90	69	91	87	60	91	83	55	91	80	50	85	60	42	80	51	36	61	44	31	53	39	27	47	34	24	41	30	32
			Exposed	91	86	60	91	82	53	90	72	48	86	61	43	83	55	39	78	50	36	63	46	33	54	39	28	46	33	24	40	29	31	35	25	27	31	34	24	27	30	21
		7-20	Interior	91	91	88	91	91	83	91	86	65	91	82	58	90	64	53	86	58	48	83	53	44	72	45	37	59	39	32	51	33	28	45	29	24	39	26	32	35	23	29
			Exposed	89	64	53	85	57	47	82	51	42	75	46	38	64	42	35	58	38	32	53	35	29	45	30	24	39	25	32	33	33	27	29	29	24	26	26	21	35	23	19
		20-27	Interior	100	100	99	100	100	93	100	94	88	100	89	83	100	85	65	98	81	56	94	64	50	88	54	40	82	47	33	72	40	28	60	35	24	53	31	21	47	28	19
			Exposed	100	85	64	97	80	54	92	62	47	88	56	41	85	50	36	82	46	32	78	42	29	61	36	24	52	31	21	45	26	27	39	23	24	35	31	21	31	27	19
		27-45	Interior	102	102	102	102	102	98	102	102	93	102	98	88	102	94	84	98	90	80	93	86	63	85	79	51	65	58	42	56	51	36	49	44	30	43	39	26	39	35	23
			Exposed	102	94	84	97	89	80	91	84	59	86	80	52	82	63	47	64	58	42	59	53	38	50	45	31	43	38	26	37	33	22	32	29	19	29	26	24	25	23	21
	D	0-7	Interior	91	91	84	91	91	79	91	87	61	91	84	55	91	80	50	89	65	46	85	59	42	76	50	35	59	43	30	51	37	26	44	32	23	39	29	31	35	25	27
			Exposed	91	80	50	88	63	45	83	57	40	80	51	36	64	46	33	58	42	30	53	39	27	45	33	23	38	28	30	33	24	26	29	32	23	26	28	20	34	25	18
		7-20	Interior	91	88	80	91	83	60	90	67	54	87	59	49	83	54	44	80	49	40	71	45	37	58	38	31	49	32	27	43	28	23	37	25	31	33	33	27	29	29	24
			Exposed	83	53	44	79	48	39	66	43	35	59	39	32	54	35	29	49	32	26	45	29	24	38	25	31	32	32	27	28	28	23	25	24	20	33	21	18	29	19	16
		20-27	Interior	101	96	90	101	91	84	101	86	80	99	82	57	94	65	50	91	59	44	87	54	40	82	46	32	68	39	27	58	34	23	50	30	20	44	26	27	39	23	24
			Exposed	94	64	50	90	58	43	86	52	37	82	47	33	78	42	29	66	39	26	60	35	24	51	30	20	44	26	27	38	34	23	33	29	20	29	26	18	26	23	16
		27-45	Interior	103	103	95	103	100	90	103	95	85	99	90	81	94	86	64	89	82	56	85	76	50	64	57	41	55	49	34	47	42	29	41	37	25	37	33	21	32	29	19
			Exposed	94	86	63	88	81	55	83	65	48	65	58	42	59	53	38	54	48	34	49	44	31	42	37	25	36	32	21	31	28	27	27	24	23	24	33	20	32	29	18
20	B	0-7	Interior	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	60	72	72	51	72	63	45	72	55	39	69	48	34	59	43	30
			Exposed	72	72	72	72	72	72	72	72	72	72	72	62	72	72	56	72	72	51	72	67	46	72	56	39	66	48	34	56	41	29	49	36	25	43	32	34	39	28	30
		7-20	Interior	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	63	73	64	53	73	55	45	73	48	39	64	42	34	56	37	30	50	32	27
			Exposed	73	73	73	73	73	73	73	73	60	73	69	54	73	60	49	73	54	45	73	50	41	64	42	35	55	36	30	48	31	26	42	27	34	37	24	30	32	32	27
		20-27	Interior	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	91	92	92	86	92	85	66	92	73	52	90	57	43	85	50	36	80	44	31	68	39	27
			Exposed	92	92	92	92	92	89	92	91	84	92	86	80	92	82	57	92	67	51	91	60	45	85	51	37	80	43	30	64	38	26	56	33	23	49	29	20	44	26	27
		27-45	Interior	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	91	96	94	84	95	87	69	88	81	54	82	63	46	62	55	40	55	49	35
			Exposed	96	96	96	96	96	94	96	96	89	96	95	85	96	91	81	94	87	65	90	83	57	82	63	47	61	54	39	53	47	33	46	41	28	41	36	24	36	32	21
	C	0-7	Interior	72	72	72	72	72	72	72	72	72	72	72	69	72	72	60	72	72	55	72	72	50	72	60	42	72	51	36	61	44	31	53	39	27	47	34	24	41	30	32
			Exposed	72	72	60	72	72	53	72	72	48	72	61	43	72	55	39	72	50	36	63	46	33	54	39	28	46	33	24	40	29	31	35	25	27	31	34	24	27	30	21
		7-20	Interior	73	73	73	73	73	73	73	73	65	73	73	58	73	64	53	73	58	48	73	53	44	72	45	37	59	39	32	51	33	28	45	29	24	39	26	32	35	23	29
			Exposed	73	64	53	73	57	47	73	51	42	73	46	38	64	42	35	58	38	32	53	35	29	45	30	24	39	25	32	33	33	27	29	29	24	26	26	21	35	23	19
		20-27	Interior	92	92	92	92	92	92	92	92	88	92	89	83	92	85	65	92	81	56	92	64	50	88	54	40	82	47	33	72	40	28	60	35	24	53	31	21	47	28	19
			Exposed	92	85	64	92	80	54	92	62	47	88	56	41	85	50	36	82	46	32	78	42	29	61	36	24	52	31	21	45	26	27	39	23	24	35	31	21	31	27	19
		27-45	Interior	96	96	96	96	96	96	96	96	93	96	96	88	96	94	84	96	90	80	93	86	63	85	79	51	65	58	42	56	51	36	49	44	30	43	39	26	39	35	23
			Exposed	96	94	84	96	89	80	91	84	59	86	80	52	82	63	47	64	58	42	59	53	38	50	45	31	43	38	26	37	33	22	32	29	19	29	26	24	25	23	21
	D	0-7	Interior	72	72	72	72	72	72	72	72	61	72	72	55	72	72	50	72	65	46	72	59	42	72	50	35	59	43	30	51	37	26	44	32	23	39	29	31	35	25	27
			Exposed	72	72	50	72	63	45	72	57	40	72	51	36	64	46	33	58	42	30	53	39	27	45	33	23	38	28	30	33	24	26	29	32	23	26	28	20	34	25	18
		7-20	Interior	73	73	73	73	73	60	73	67	54	73	59	49	73	54	44	73	49	40	71	45	37	58	38	31	49	32	27	43	28	23	37	25	31	33	33	27	29	29	24
			Exposed	73	53	44	73	48	39	66	43	35	59	39	32	54	35	29	49	32	26	45	29	24	38	25	31	32	32	27	28	28	23	25	24	20	33	21	18	29	19	16
		20-27	Interior	94	94	90	94	91	84	94	86	80	94	82	57	94	65	50	91	59	44	87	54	40	82	46	32	68	39	27	58	34	23	50	30	20	44	26	27	39	23	24
			Exposed	94	64	50	90	58	43	86	52	37	82	47	33	78	42	29	66	39	26	60	35	24	51	30	20	44	26	27	38	34	23	33	29	20	29	26	18	26	23	16
		27-45	Interior	97	97	95	97	97	90	97	95	85	97	90	81	94	86	64	89	82	56	85	76	50	64	57	41	55	49	34	47	42	29	41	37	25	37	33	21	32	29	19
			Exposed	94	86	63	88	81	55	83	65	48	65	58	42	59	53	38	54	48	34	49	44	31	42	37	25	36	32	21	31	28	27	27	24	23	24	33	20	32	29	18

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

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ASCE 7-16	II	30 ft	Ss = 1.25	19 sq.ft	LANDSCAPE	CROSS-SLOPE	NXT	NXT COMBO	Solarhooks CT2
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																								
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																								
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
30	B	0-7	Interior	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	60	70	70	51	70	63	45	70	55	39	69	48	34	59	43	30
			Exposed	70	70	70	70	70	70	70	70	70	70	70	62	70	70	56	70	70	51	70	67	46	70	56	39	66	48	34	56	41	29	49	36	25	43	32	34	39	28	30
		7-20	Interior	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	63	73	64	53	73	55	45	73	48	39	64	42	34	56	37	30	50	32	27
			Exposed	73	73	73	73	73	73	73	73	60	73	69	54	73	60	49	73	54	45	73	50	41	64	42	35	55	36	30	48	31	26	42	27	34	37	24	30	32	32	27
		20-27	Interior	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	85	66	86	73	52	86	57	43	85	50	36	80	44	31	68	39	27
			Exposed	86	86	86	86	86	86	86	86	84	86	86	80	86	82	57	86	67	51	86	60	45	85	51	37	80	43	30	64	38	26	56	33	23	49	29	20	44	26	27
		27-45	Interior	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	84	90	87	69	88	81	54	82	63	46	62	55	40	55	49	35
			Exposed	90	90	90	90	90	90	90	90	89	90	90	85	90	90	81	90	87	65	90	83	57	82	63	47	61	54	39	53	47	33	46	41	28	41	36	24	36	32	21
	C	0-7	Interior	70	70	70	70	70	70	70	70	70	70	70	69	70	70	60	70	70	55	70	70	50	70	60	42	70	51	36	61	44	31	53	39	27	47	34	24	41	30	32
			Exposed	70	70	60	70	70	53	70	70	48	70	61	43	70	55	39	70	50	36	63	46	33	54	39	28	46	33	24	40	29	31	35	25	27	31	34	24	27	30	21
		7-20	Interior	73	73	73	73	73	73	73	73	65	73	73	58	73	64	53	73	58	48	73	53	44	72	45	37	59	39	32	51	33	28	45	29	24	39	26	32	35	23	29
			Exposed	73	64	53	73	57	47	73	51	42	73	46	38	64	42	35	58	38	32	53	35	29	45	30	24	39	25	32	33	33	27	29	29	24	26	26	21	35	23	19
		20-27	Interior	86	86	86	86	86	86	86	86	86	86	86	83	86	85	65	86	81	56	86	64	50	86	54	40	82	47	33	72	40	28	60	35	24	53	31	21	47	28	19
			Exposed	86	85	64	86	80	54	86	62	47	86	56	41	85	50	36	82	46	32	78	42	29	61	36	24	52	31	21	45	26	27	39	23	24	35	31	21	31	27	19
		27-45	Interior	90	90	90	90	90	90	90	90	90	90	90	88	90	90	84	90	90	80	90	86	63	85	79	51	65	58	42	56	51	36	49	44	30	43	39	26	39	35	23
			Exposed	90	90	84	90	89	80	90	84	59	86	80	52	82	63	47	64	58	42	59	53	38	50	45	31	43	38	26	37	33	22	32	29	19	29	26	24	25	23	21
	D	0-7	Interior	72	72	72	72	72	72	72	72	61	72	72	55	72	72	50	72	65	46	72	59	42	72	50	35	59	43	30	51	37	26	44	32	23	39	29	31	35	25	27
			Exposed	72	72	50	72	63	45	72	57	40	72	51	36	64	46	33	58	42	30	53	39	27	45	33	23	38	28	30	33	24	26	29	32	23	26	28	20	34	25	18
		7-20	Interior	73	73	73	73	73	60	73	67	54	73	59	49	73	54	44	73	49	40	71	45	37	58	38	31	49	32	27	43	28	23	37	25	31	33	33	27	29	29	24
			Exposed	73	53	44	73	48	39	66	43	35	59	39	32	54	35	29	49	32	26	45	29	24	38	25	31	32	32	27	28	28	23	25	24	20	33	21	18	29	19	16
		20-27	Interior	88	88	88	88	88	84	88	86	80	88	82	57	88	65	50	88	59	44	87	54	40	82	46	32	68	39	27	58	34	23	50	30	20	44	26	27	39	23	24
			Exposed	88	64	50	88	58	43	86	52	37	82	47	33	78	42	29	66	39	26	60	35	24	51	30	20	44	26	27	38	34	23	33	29	20	29	26	18	26	23	16
		27-45	Interior	92	92	92	92	92	90	92	92	85	92	90	81	92	86	64	89	82	56	85	76	50	64	57	41	55	49	34	47	42	29	41	37	25	37	33	21	32	29	19
			Exposed	92	86	63	88	81	55	83	65	48	65	58	42	59	53	38	54	48	34	49	44	31	42	37	25	36	32	21	31	28	27	27	24	23	24	33	20	32	29	18
40	B	0-7	Interior	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	51	58	58	51	58	58	45	58	55	39	58	48	34	58	43	30
			Exposed	58	58	58	58	58	58	58	58	58	58	58	58	58	58	56	58	58	51	58	58	46	58	56	39	58	48	34	56	41	29	49	36	25	43	32	34	39	28	30
		7-20	Interior	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	53	62	55	45	62	48	39	62	42	34	56	37	30	50	32	27
			Exposed	62	62	62	62	62	62	62	62	60	62	62	54	62	60	49	62	54	45	62	50	41	62	42	35	55	36	30	48	31	26	42	27	34	37	24	30	32	32	27
		20-27	Interior	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	66	76	73	52	76	57	43	76	50	36	76	44	31	68	39	27
			Exposed	76	76	76	76	76	76	76	76	76	76	76	76	76	76	57	76	67	51	76	60	45	76	51	37	76	43	30	64	38	26	56	33	23	49	29	20	44	26	27
		27-45	Interior	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	84	86	86	69	82	81	54	76	63	46	62	55	40	55	49	35
			Exposed	86	86	86	86	86	86	86	86	86	86	86	85	86	86	81	86	86	65	86	83	57	82	63	47	61	54	39	53	47	33	46	41	28	41	36	24	36	32	21
	C	0-7	Interior	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	55	58	58	50	58	58	42	58	51	36	58	44	31	53	39	27	47	34	24	41	30	32
			Exposed	58	58	58	58	58	53	58	58	48	58	58	43	58	55	39	58	50	36	58	46	33	54	39	28	46	33	24	40	29	31	35	25	27	31	34	24	27	30	21
		7-20	Interior	62	62	62	62	62	62	62	62	62	62	62	58	62	62	53	62	58	48	62	53	44	62	45	37	59	39	32	51	33	28	45	29	24	39	26	32	35	23	29
			Exposed	62	62	53	62	57	47	62	51	42	62	46	38	62	42	35	58	38	32	53	35	29	45	30	24	39	25	32	33	33	27	29	29	24	26	26	21	35	23	19
		20-27	Interior	76	76	76	76	76	76	76	76	76	76	76	76	76	76	65	76	76	56	76	64	50	76	54	40	76	47	33	72	40	28	60	35	24	53	31	21	47	28	19
			Exposed	76	76	64	76	76	54	76	62	47	76	56	41	76	50	36	76	46	32	76	42	29	61	36	24	52	31	21	45	26	27	39	23	24	35	31	21	31	27	19
		27-45	Interior	86	86	86	86	86	86	86	86	86	86	86	86	86	86	84	86	86	80	85	85	63	80	79	51	65	58	42	56	51	36	49	44	30	43	39	26	39	35	23
			Exposed	86	86	84	86	86	80	86	84	59	86	80	52	82	63	47	64	58	42	59	53	38	50	45	31	43	38	26	37	33	22	32	29	19	29	26	24	25	23	21
	D	0-7	Interior	63	63	63	63	63	63	63	63	61	63	63	55	63	63	50	63	63	46	63	59	42	63	50	35	59	43	30	51	37	26	44	32	23	39	29	31	35	25	27
			Exposed	63	63	50	63	63	45	63	57	40	63	51	36	63	46	33	58	42	30	53	39	27	45	33	23	38	28	30	33	24	26	29	32	23	26	28	20	34	25	18
		7-20	Interior	66	66	66	66	66	60	66	66	54	66	59	49	66	54	44	66	49	40	66	45	37	58	38	31	49	32	27	43	28	23	37	25	31	33	33	27	29	29	24
			Exposed	66	53	44	66	48	39	66	43	35	59	39	32	54	35	29	49	32	26	45	29	24	38	25	31	32	32	27	28	28	23	25	24	20	33	21	18	29	19	16
		20-27	Interior	80	80	80	80	80	80	80	80	80	80	80	57	80	65	50	80	59	44	80	54	40	80	46	32	68	39	27	58	34	23	50	30	20	44	26	27	39	23	24
			Exposed	80	64	50	80	58	43	80	52	37	80	47	33	78	42	29	66	39	26	60	35	24	51	30	20	44	26	27	38	34	23	33	29	20	29	26	18	26	23	16
		27-45	Interior	88	88	88	88	88	88	88	88	85	88	88	81	88	86	64	86	82	56	85	76	50	64	57	41	55	49	34	47	42	29	41	37	25	37	33	21	32	29	19
			Exposed	88	86	63	88	81	55	83	65	48	65	58	42	59	53	38	54	48	34	49	44	31	42	37	25	36	32	21	31	28	27	27	24	23	24	33	20	32	29	18
50	B	0-7	Interior	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	45	48	48	39	48	48	34	48	43	30
			Exposed	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	46	48	48	39	48	48	34	48	41	29	48	36	25	43	32	34	39	28	30
		7-20	Interior	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	45	52	52	45	52	48	39	52	42	34	51	37	30	50	32	27
			Exposed	52	52	52	52	52	52	52	52	52	52	52	52	52	52	49	52	52	45	52	50	41	52	42	35	52	36	30	48	31	26	42	27	34	37	24	30	32	32	27
		20-27	Interior	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	52	66	57	43	66	50	36	64	44	31	62	39	27
			Exposed	66	66	66	66	66	66	66	66	66	66	66	66	66	66	57	66	66	51	66	60	45	66	51	37	66	43	30	64	38	26	56	33	23	49	29	20	44	26	27
		27-45	Interior	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	74	74	69	69	69	54	65	63	46	61	55	40	55	49	35
			Exposed	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	65	77	77	57	77	63	47	61	54	39	53	47	33	46	41	28	41	36	24	36	32	21
	C	0-7	Interior	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	42	48	48	36	48	44	31	48	39	27	47	34	24	41	30	32
			Exposed	48	48	48	48	48	48	48	48	48	48	48	43	48	48	39	48	48	36	48	46	33	48	39	28	46	33	24	40	29	31	35	25	27	31	34	24	27	30	21
		7-20	Interior	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	48	52	52	44	52	45	37	52	39	32	50	33	28	45	29	24	39	26	32	35	23	29
			Exposed	52	52	52	52	52	47	52	51	42	52	46	38	52	42	35	52	38	32	52	35	29	45	30	24	39	25	32	33	33	27	29	29	24	26	26	21	35	23	19
		20-27	Interior	66	66	66	66	66	66	66	66	66	66	66	66	66	66	65	66	66	56	66	64	50	66	54	40	65	47	33	62	40	28	60	35	24	53	31	21	47	28	19
			Exposed	66	66	64	66	66	54	66	62	47	66	56	41	66	50	36	66	46	32	66	42	29	61	36	24	52	31	21	45	26	27	39	23	24	35	31	21	31	27	19
		27-45	Interior	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	76	76	76	73	73	63	67	67	51	63	58	42	56	51	36	49	44	30	43	39	26	39	35	23
			Exposed	77	77	77	77	77	77	77	77	59	77	77	52	77	63	47	64	58	42	59	53	38	50	45	31	43	38	26	37	33	22	32	29	19	29	26	24	25	23	21
	D	0-7	Interior	53	53	53	53	53	53	53	53	53	53	53	53	53	53	50	53	53	46	53	53	42	53	50	35	53	43	30	51	37	26	44	32	23	39	29	31	35	25	27
			Exposed	53	53	50	53	53	45	53	53	40	53	51	36	53	46	33	53	42	30	53	39	27	45	33	23	38	28	30	33	24	26	29	32	23	26	28	20	34	25	18
		7-20	Interior	57	57	57	57	57	57	57	57	54	57	57	49	57	54	44	57	49	40	57	45	37	56	38	31	49	32	27	43	28	23	37	25	31	33	33	27	29	29	24
			Exposed	57	53	44	57	48	39	57	43	35	57	39	32	54	35	29	49	32	26	45	29	24	38	25	31	32	32	27	28	28	23	25	24	20	33	21	18	29	19	16
		20-27	Interior	70	70	70	70	70	70	70	70	70	70	70	57	70	65	50	70	59	44	70	54	40	70	46	32	67	39	27	58	34	23	50	30	20	44	26	27	39	23	24
			Exposed	70	64	50	70	58	43	70	52	37	70	47	33	70	42	29	66	39	26	60	35	24	51	30	20	44	26	27	38	34	23	33	29	20	29	26	18	26	23	16
		27-45	Interior	82	82	82	82	82	82	82	82	82	82	82	81	80	80	64	76	76	56	73	73	50	64	57	41	55	49	34	47	42	29	41	37	25	37	33	21	32	29	19
			Exposed	82	82	63	82	81	55	82	65	48	65	58	42	59	53	38	54	48	34	49	44	31	42	37	25	36	32	21	31	28	27	27	24	23	24	33	20	32	29	18

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~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 1.25	19 sq.ft	LANDSCAPE	CROSS-SLOPE	NXT	NXT COMBO	Solarhooks CT2
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																								
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																								
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
60	B	0-7	Interior	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	39	40	40	34	40	40	30
			Exposed	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	39	40	40	34	40	40	29	40	36	25	40	32	34	39	28	30
		7-20	Interior	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	39	44	42	34	44	37	30	44	32	27
			Exposed	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	41	44	42	35	44	36	30	44	31	26	42	27	34	37	24	30	32	32	27
		20-27	Interior	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	52	58	57	43	58	50	36	56	44	31	55	39	27			
			Exposed	58	58	58	58	58	58	58	58	58	58	58	58	58	58	57	58	58	51	58	58	45	58	51	37	58	43	30	58	38	26	56	33	23	49	29	20	44	26	27
		27-45	Interior	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	68	68	68	65	65	65	62	62	54	59	59	46	56	55	40	53	49	35
			Exposed	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	65	69	69	57	68	63	47	61	54	39	53	47	33	46	41	28	41	36	24	36	32	21
	C	0-7	Interior	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	36	40	40	31	40	39	27	40	34	24	40	30	32
			Exposed	40	40	40	40	40	40	40	40	40	40	40	40	40	40	39	40	40	36	40	40	33	40	39	28	40	33	24	40	29	31	35	25	27	31	34	24	27	30	21
		7-20	Interior	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	37	44	39	32	44	33	28	42	29	24	39	26	32	35	23	29
			Exposed	44	44	44	44	44	44	44	44	42	44	44	38	44	42	35	44	38	32	44	35	29	44	30	24	39	25	32	33	33	27	29	29	24	26	26	21	35	23	19
		20-27	Interior	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	56	58	58	50	58	54	40	57	47	33	55	40	28	53	35	24	51	31	21	47	28	19
			Exposed	58	58	58	58	58	54	58	58	47	58	56	41	58	50	36	58	46	32	58	42	29	58	36	24	52	31	21	45	26	27	39	23	24	35	31	21	31	27	19
		27-45	Interior	69	69	69	69	69	69	69	69	69	69	69	69	68	68	68	66	66	66	64	64	63	60	60	51	57	57	42	54	51	36	49	44	30	43	39	26	39	35	23
			Exposed	69	69	69	69	69	69	69	69	59	69	69	52	68	63	47	64	58	42	59	53	38	50	45	31	43	38	26	37	33	22	32	29	19	29	26	24	25	23	21
	D	0-7	Interior	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	42	44	44	35	44	43	30	44	37	26	44	32	23	39	29	31	35	25	27
			Exposed	44	44	44	44	44	44	44	44	40	44	44	36	44	44	33	44	42	30	44	39	27	44	33	23	38	28	30	33	24	26	29	32	23	26	28	20	34	25	18
		7-20	Interior	48	48	48	48	48	48	48	48	48	48	48	48	48	48	44	48	48	40	48	45	37	48	38	31	47	32	27	43	28	23	37	25	31	33	33	27	29	29	24
			Exposed	48	48	44	48	48	39	48	43	35	48	39	32	48	35	29	48	32	26	45	29	24	38	25	31	32	32	27	28	28	23	25	24	20	33	21	18	29	19	16
		20-27	Interior	63	63	63	63	63	63	63	63	63	63	63	57	63	63	50	63	59	44	63	54	40	61	46	32	59	39	27	56	34	23	50	30	20	44	26	27	39	23	24
			Exposed	63	63	50	63	58	43	63	52	37	63	47	33	63	42	29	63	39	26	60	35	24	51	30	20	44	26	27	38	34	23	33	29	20	29	26	18	26	23	16
		27-45	Interior	74	74	74	74	74	74	74	74	74	72	72	72	69	69	64	66	66	56	64	64	50	60	57	41	55	49	34	47	42	29	41	37	25	37	33	21	32	29	19
			Exposed	74	74	63	74	74	55	74	65	48	65	58	42	59	53	38	54	48	34	49	44	31	42	37	25	36	32	21	31	28	27	27	24	23	24	33	20	32	29	18
70	B	0-7	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	34	35	35	30
			Exposed	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	34	35	35	29	35	35	25	35	32	34	35	28	30
		7-20	Interior	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	34	38	37	30	38	32	27
			Exposed	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	35	38	36	30	38	31	26	38	27	34	37	24	30	32	32	27
		20-27	Interior	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	43	51	50	36	51	44	31	49	39	27
			Exposed	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	45	51	51	37	51	43	30	51	38	26	51	33	23	49	29	20	44	26	27
		27-45	Interior	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	61	61	61	59	59	59	56	56	54	54	54	46	52	52	40	49	49	35
			Exposed	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	57	61	61	47	59	54	39	53	47	33	46	41	28	41	36	24	36	32	21
	C	0-7	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	31	35	35	27	35	34	24	35	30	32
			Exposed	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	33	35	35	28	35	33	24	35	29	31	35	25	27	31	34	24	27	30	21
		7-20	Interior	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	37	38	38	32	38	33	28	38	29	24	37	26	32	35	23	29
			Exposed	38	38	38	38	38	38	38	38	38	38	38	38	38	38	35	38	38	32	38	35	29	38	30	24	38	25	32	33	33	27	29	29	24	26	26	21	35	23	19
		20-27	Interior	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	50	51	51	40	51	47	33	49	40	28	48	35	24	46	31	21	44	28	19
			Exposed	51	51	51	51	51	51	51	51	47	51	51	41	51	50	36	51	46	32	51	42	29	51	36	24	51	31	21	45	26	27	39	23	24	35	31	21	31	27	19
		27-45	Interior	62	62	62	62	62	62	62	62	62	62	62	62	61	61	61	60	60	60	58	58	58	55	55	51	52	52	42	50	50	36	47	44	30	43	39	26	39	35	23
			Exposed	62	62	62	62	62	62	62	62	59	62	62	52	61	61	47	60	58	42	58	53	38	50	45	31	43	38	26	37	33	22	32	29	19	29	26	24	25	23	21
	D	0-7	Interior	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	35	38	38	30	38	37	26	38	32	23	38	29	31	35	25	27
			Exposed	38	38	38	38	38	38	38	38	38	38	38	36	38	38	33	38	38	30	38	38	27	38	33	23	38	28	30	33	24	26	29	32	23	26	28	20	34	25	18
		7-20	Interior	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	40	42	42	37	42	38	31	42	32	27	41	28	23	37	25	31	33	33	27	29	29	24
			Exposed	42	42	42	42	42	39	42	42	35	42	39	32	42	35	29	42	32	26	42	29	24	38	25	31	32	32	27	28	28	23	25	24	20	33	21	18	29	19	16
		20-27	Interior	56	56	56	56	56	56	56	56	56	56	56	56	56	56	50	56	56	44	56	54	40	55	46	32	53	39	27	51	34	23	48	30	20	44	26	27	39	23	24
			Exposed	56	56	50	56	56	43	56	52	37	56	47	33	56	42	29	56	39	26	56	35	24	51	30	20	44	26	27	38	34	23	33	29	20	29	26	18	26	23	16
		27-45	Interior	67	67	67	67	67	67	66	66	66	64	64	64	62	62	62	60	60	56	59	59	50	55	55	41	52	49	34	47	42	29	41	37	25	37	33	21	32	29	19
			Exposed	67	67	63	67	67	55	66	65	48	64	58	42	59	53	38	54	48	34	49	44	31	42	37	25	36	32	21	31	28	27	27	24	23	24	33	20	32	29	18
80	B	0-7	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
			Exposed	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	25	30	30	34	30	28	30
		7-20	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	32	27
			Exposed	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	30	33	31	26	33	27	34	33	24	30	32	32	27
		20-27	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	43	45	45	36	45	44	31	45	39	27
			Exposed	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	37	45	43	30	45	38	26	45	33	23	45	29	20	44	26	27
		27-45	Interior	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	54	54	54	52	52	52	50	50	46	48	48	40	46	46	35
			Exposed	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	47	54	54	39	52	47	33	46	41	28	41	36	24	36	32	21
	C	0-7	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	27	30	30	24	30	30	32
			Exposed	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	28	30	30	24	30	29	31	30	25	27	30	34	24	27	30	21
		7-20	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	32	33	33	28	33	29	24	33	26	32	32	23	29
			Exposed	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	32	33	33	29	33	30	24	33	25	32	33	33	27	29	29	24	26	26	21	35	23	19
		20-27	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	40	45	45	33	45	40	28	43	35	24	42	31	21	40	28	19
			Exposed	45	45	45	45	45	45	45	45	45	45	45	41	45	45	36	45	45	32	45	42	29	45	36	24	45	31	21	45	26	27	39	23	24	35	31	21	31	27	19
		27-45	Interior	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	55	55	55	53	53	53	51	51	51	49	49	42	46	46	36	44	44	30	42	39	26	39	35	23
			Exposed	56	56	56	56	56	56	56	56	56	56	56	52	56	56	47	55	55	42	53	53	38	50	45	31	43	38	26	37	33	22	32	29	19	29	26	24	25	23	21
	D	0-7	Interior	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	30	34	34	26	34	32	23	34	29	31	34	25	27
			Exposed	34	34	34	34	34	34	34	34	34	34	34	34	34	34	33	34	34	30	34	34	27	34	33	23	34	28	30	33	24	26	29	32	23	26	28	20	34	25	18
		7-20	Interior	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	31	37	32	27	37	28	23	36	25	31	33	33	27	29	29	24
			Exposed	37	37	37	37	37	37	37	37	35	37	37	32	37	35	29	37	32	26	37	29	24	37	25	31	32	32	27	28	28	23	25	24	20	33	21	18	29	19	16
		20-27	Interior	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	44	49	49	40	49	46	32	48	39	27	46	34	23	44	30	20	43	26	27	39	23	24
			Exposed	49	49	49	49	49	43	49	49	37	49	47	33	49	42	29	49	39	26	49	35	24	49	30	20	44	26	27	38	34	23	33	29	20	29	26	18	26	23	16
		27-45	Interior	61	61	61	61	61	61	60	60	60	59	59	59	57	57	57	56	56	56	54	54	50	51	51	41	48	48	34	46	42	29	41	37	25	37	33	21	32	29	19
			Exposed	61	61	61	61	61	55	60	60	48	59	58	42	57	53	38	54	48	34	49	44	31	42	37	25	36	32	21	31	28	27	27	24	23	24	33	20	32	29	18

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 1.25	19 sq.ft	LANDSCAPE	CROSS-SLOPE	NXT	NXT COMBO	Solarhooks CT2
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																						
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
90	B	0-7	Interior	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27
			Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	25	27	27	34	27	27	30
		7-20	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	27
			Exposed	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	26	30	27	34	30	24	30	30	32	27
		20-27	Interior	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	36	40	40	31	40	39	27
			Exposed	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	37	40	40	30	40	38	26	40	33	23	40	29	20	40	26	27
		27-45	Interior	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	50	50	50	48	48	48	46	46	46	44	44	40	43	43	35
			Exposed	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	47	50	50	39	48	47	33	46	41	28	41	36	24	36	32	21
	C	0-7	Interior	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	24	27	27	32
			Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	24	27	27	31	27	25	27	27	34	24	27	30	~~21~~
		7-20	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	28	30	29	24	30	26	32	30	23	29
			Exposed	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	24	30	25	32	30	33	27	29	29	24	26	26	~~21~~	35	23	~~19~~
		20-27	Interior	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	33	40	40	28	40	35	24	39	31	21	37	28	19
			Exposed	40	40	40	40	40	40	40	40	40	40	40	40	40	40	36	40	40	32	40	40	29	40	36	24	40	31	21	40	26	27	39	23	24	35	31	21	31	27	19
		27-45	Interior	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	50	50	50	49	49	49	47	47	47	45	45	42	43	43	36	41	41	30	39	39	26	37	35	23
			Exposed	51	51	51	51	51	51	51	51	51	51	51	51	51	51	47	50	50	42	49	49	38	47	45	31	43	38	26	37	33	22	32	29	19	29	26	24	25	23	21
	D	0-7	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	26	30	30	23	30	29	31	30	25	27
			Exposed	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	27	30	30	23	30	28	30	30	24	26	29	32	23	26	28	~~20~~	34	25	~~18~~
		7-20	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	31	33	32	27	33	28	23	33	25	31	32	33	27	29	29	24
			Exposed	33	33	33	33	33	33	33	33	33	33	33	32	33	33	29	33	32	26	33	29	24	33	25	31	32	32	27	28	28	23	25	24	~~20~~	33	~~21~~	~~18~~	29	~~19~~	~~16~~
		20-27	Interior	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	40	44	44	32	44	39	27	43	34	23	41	30	20	39	26	27	38	23	24
			Exposed	44	44	44	44	44	43	44	44	37	44	44	33	44	42	29	44	39	26	44	35	24	44	30	20	44	26	27	38	34	23	33	29	20	29	26	~~18~~	26	23	~~16~~
		27-45	Interior	56	56	56	56	56	56	56	56	56	54	54	54	53	53	53	52	52	52	50	50	50	48	48	41	45	45	34	43	42	29	41	37	25	37	33	21	32	29	19
			Exposed	56	56	56	56	56	55	56	56	48	54	54	42	53	53	38	52	48	34	49	44	31	42	37	25	36	32	21	31	28	27	27	24	23	24	33	20	32	29	18
100	B	0-7	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
			Exposed	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	34	25	25	30
		7-20	Interior	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27
			Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	26	27	27	34	27	24	30	27	32	27
		20-27	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	31	36	36	27
			Exposed	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	30	36	36	26	36	33	23	36	29	20	36	26	27
		27-45	Interior	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	45	45	45	43	43	43	42	42	40	40	40	35
			Exposed	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	39	45	45	33	43	41	28	41	36	24	36	32	21
	C	0-7	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	24	25	25	32
			Exposed	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	24	25	25	31	25	25	27	25	34	24	25	30	~~21~~
		7-20	Interior	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	24	27	26	32	27	23	29
			Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	24	27	25	32	27	33	27	27	29	24	26	26	~~21~~	35	23	~~19~~
		20-27	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	33	36	36	28	36	35	24	36	31	21	35	28	19
			Exposed	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	32	36	36	29	36	36	24	36	31	21	36	26	27	36	23	24	35	31	21	31	27	19
		27-45	Interior	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	44	44	44	42	42	42	40	40	36	39	39	30	37	37	26	35	35	23
			Exposed	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	42	46	46	38	44	44	31	42	38	26	37	33	22	32	29	19	29	26	24	25	23	21
	D	0-7	Interior	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	26	27	27	23	27	27	31	27	25	27
			Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	23	27	27	30	27	24	26	27	32	23	26	28	~~20~~	34	25	~~18~~
		7-20	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	27	30	28	23	30	25	31	29	33	27	28	29	24
			Exposed	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	26	30	29	24	30	25	31	30	32	27	28	28	23	25	24	~~20~~	33	~~21~~	~~18~~	29	~~19~~	~~16~~
		20-27	Interior	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	32	40	39	27	39	34	23	38	30	20	37	26	27	35	23	24
			Exposed	40	40	40	40	40	40	40	40	37	40	40	33	40	40	29	40	39	26	40	35	24	40	30	20	40	26	27	38	34	23	33	29	20	29	26	~~18~~	26	23	~~16~~
		27-45	Interior	51	51	51	51	51	51	51	51	51	50	50	50	49	49	49	48	48	48	47	47	47	45	45	41	43	43	34	41	41	29	38	37	25	36	33	21	32	29	19
			Exposed	51	51	51	51	51	51	51	51	48	50	50	42	49	49	38	48	48	34	47	44	31	42	37	25	36	32	21	31	28	27	27	24	23	24	33	20	32	29	18

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 1.25	23 sq.ft	PORTRAIT	CROSS-SLOPE	NXT	NXT COMBO	Solarhooks CT2
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																						
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
0	B	0-7	Interior	74	74	74	74	74	74	74	74	68	74	74	56	74	74	48	74	70	41	74	61	35	74	46	30	60	37	25	48	31	22	39	27	19	33	24	17	29	21	15
			Exposed	74	74	47	74	67	39	74	57	34	74	48	31	69	41	28	59	36	25	51	33	23	39	28	19	32	24	17	28	20	14	24	18	19	21	16	17	19	14	15
		7-20	Interior	74	74	74	74	74	73	74	74	58	74	69	47	74	56	39	74	47	34	68	40	31	54	32	26	44	27	22	36	24	19	32	21	17	28	18	15	25	16	13
			Exposed	74	56	39	74	45	33	64	37	30	56	33	27	49	30	24	43	27	22	38	25	20	32	21	17	27	18	15	24	15	19	21	13	17	18	18	15	16	16	~~13~~
		20-27	Interior	75	75	75	75	75	75	75	75	75	75	75	75	75	75	61	75	67	49	75	56	41	75	41	31	66	33	26	54	28	21	45	25	18	38	22	15	33	19	13
			Exposed	75	75	60	75	63	47	75	52	38	75	43	32	74	36	28	65	33	25	57	30	22	46	25	18	37	21	15	32	19	13	28	16	11	24	14	15	22	19	13
		27-45	Interior	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	63	76	76	54	76	60	40	60	46	32	44	36	27	35	31	23	31	27	20	27	24	17
			Exposed	76	76	75	76	76	61	76	75	50	76	62	42	72	52	36	58	45	32	48	38	28	35	32	23	30	27	19	26	23	16	23	20	14	20	18	12	18	16	16
	C	0-7	Interior	74	74	53	74	74	44	74	63	37	74	54	33	74	46	30	66	40	27	57	35	25	44	30	21	35	25	18	30	22	15	26	19	13	23	17	18	20	15	16
			Exposed	74	46	30	64	38	26	53	34	24	45	30	21	39	27	19	34	25	18	31	23	16	27	19	14	23	16	18	20	14	15	17	19	~~13~~	15	17	~~12~~	20	15	~~10~~
		7-20	Interior	74	65	44	74	51	36	71	42	32	62	35	29	54	32	26	47	29	24	42	26	22	34	22	18	29	19	16	25	16	14	22	14	18	19	19	16	17	17	14
			Exposed	54	32	26	46	28	23	40	25	21	35	23	19	32	21	17	29	19	16	26	17	14	22	15	18	19	19	16	16	16	~~13~~	14	14	~~12~~	19	~~13~~	~~10~~	17	~~11~~	9
		20-27	Interior	75	75	71	75	73	55	75	59	44	75	49	36	75	41	31	71	35	28	63	32	25	50	27	20	41	23	16	34	20	14	30	17	12	26	15	16	23	14	14
			Exposed	75	40	31	69	34	27	59	31	23	52	28	20	45	25	18	40	23	16	36	21	14	30	18	12	26	15	16	22	20	13	19	17	~~12~~	17	15	~~10~~	15	~~13~~	9
		27-45	Interior	76	76	76	76	76	69	76	76	57	76	71	47	76	59	40	68	50	35	56	43	31	40	34	25	32	29	21	28	25	18	24	22	15	22	19	13	19	17	11
			Exposed	76	59	40	64	48	34	51	40	29	42	35	26	35	31	23	32	29	21	29	26	19	25	22	15	21	19	13	18	16	16	16	14	14	14	19	12	19	17	~~10~~
	D	0-7	Interior	74	68	40	74	57	34	74	48	30	68	41	27	58	35	25	50	32	23	43	29	21	34	25	17	29	21	15	25	18	20	22	16	17	19	14	15	17	19	~~13~~
			Exposed	57	35	25	48	31	22	41	28	20	35	25	18	32	23	16	29	21	15	26	19	13	22	16	17	19	14	15	16	18	~~13~~	14	16	~~11~~	19	14	~~10~~	17	~~12~~	9
		7-20	Interior	74	45	34	64	37	30	56	33	27	48	29	24	43	27	22	38	24	20	34	22	18	29	19	15	24	16	13	21	14	17	18	18	15	16	16	~~13~~	14	14	~~12~~
			Exposed	42	26	22	36	24	19	33	21	17	29	19	16	27	17	14	24	16	20	22	14	18	19	18	15	16	16	~~13~~	14	~~14~~	~~11~~	18	~~12~~	~~10~~	16	~~11~~	9	14	9	8
		20-27	Interior	75	64	48	75	52	38	75	42	32	73	35	28	63	32	25	56	29	22	50	27	20	40	23	16	33	19	13	29	17	11	25	15	15	22	19	13	19	17	~~12~~
			Exposed	63	32	25	54	29	21	47	26	19	41	23	16	36	21	14	33	19	13	30	17	12	25	15	15	22	19	13	19	17	~~11~~	16	14	~~10~~	14	~~13~~	9	19	~~11~~	8
		27-45	Interior	76	76	61	76	76	50	76	62	42	70	52	35	57	44	31	47	37	28	39	34	25	32	28	20	27	24	17	23	21	14	20	18	12	18	16	16	16	14	14
			Exposed	56	43	31	45	36	27	36	32	24	32	29	21	29	26	19	27	24	17	24	22	15	21	19	12	18	16	16	15	14	13	13	18	~~11~~	18	16	~~10~~	16	14	9
10	B	0-7	Interior	52	52	52	52	52	52	52	52	52	52	52	52	52	52	48	52	52	41	52	52	35	52	46	30	52	37	25	48	31	22	39	27	19	33	24	17	29	21	15
			Exposed	52	52	47	52	52	39	52	52	34	52	48	31	52	41	28	52	36	25	51	33	23	39	28	19	32	24	17	28	20	14	24	18	19	21	16	17	19	14	15
		7-20	Interior	52	52	52	52	52	52	52	52	52	52	52	47	52	52	39	52	47	34	52	40	31	52	32	26	44	27	22	36	24	19	32	21	17	28	18	15	25	16	13
			Exposed	52	52	39	52	45	33	52	37	30	52	33	27	49	30	24	43	27	22	38	25	20	32	21	17	27	18	15	24	15	19	21	13	17	18	18	15	16	16	~~13~~
		20-27	Interior	69	69	69	69	69	69	69	69	69	69	69	69	69	69	61	69	67	49	69	56	41	69	41	31	66	33	26	54	28	21	45	25	18	38	22	15	33	19	13
			Exposed	69	69	60	69	63	47	69	52	38	69	43	32	69	36	28	65	33	25	57	30	22	46	25	18	37	21	15	32	19	13	28	16	11	24	14	15	22	19	13
		27-45	Interior	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	63	74	74	54	74	60	40	60	46	32	44	36	27	35	31	23	31	27	20	27	24	17
			Exposed	74	74	74	74	74	61	74	74	50	74	62	42	72	52	36	58	45	32	48	38	28	35	32	23	30	27	19	26	23	16	23	20	14	20	18	12	18	16	16
	C	0-7	Interior	52	52	52	52	52	44	52	52	37	52	52	33	52	46	30	52	40	27	52	35	25	44	30	21	35	25	18	30	22	15	26	19	13	23	17	18	20	15	16
			Exposed	52	46	30	52	38	26	52	34	24	45	30	21	39	27	19	34	25	18	31	23	16	27	19	14	23	16	18	20	14	15	17	19	~~13~~	15	17	~~12~~	20	15	~~10~~
		7-20	Interior	52	52	44	52	51	36	52	42	32	52	35	29	52	32	26	47	29	24	42	26	22	34	22	18	29	19	16	25	16	14	22	14	18	19	19	16	17	17	14
			Exposed	52	32	26	46	28	23	40	25	21	35	23	19	32	21	17	29	19	16	26	17	14	22	15	18	19	19	16	16	16	~~13~~	14	14	~~12~~	19	~~13~~	~~10~~	17	~~11~~	9
		20-27	Interior	69	69	69	69	69	55	69	59	44	69	49	36	69	41	31	69	35	28	63	32	25	50	27	20	41	23	16	34	20	14	30	17	12	26	15	16	23	14	14
			Exposed	69	40	31	69	34	27	59	31	23	52	28	20	45	25	18	40	23	16	36	21	14	30	18	12	26	15	16	22	20	13	19	17	~~12~~	17	15	~~10~~	15	~~13~~	9
		27-45	Interior	74	74	74	74	74	69	74	74	57	74	71	47	74	59	40	68	50	35	56	43	31	40	34	25	32	29	21	28	25	18	24	22	15	22	19	13	19	17	11
			Exposed	74	59	40	64	48	34	51	40	29	42	35	26	35	31	23	32	29	21	29	26	19	25	22	15	21	19	13	18	16	16	16	14	14	14	19	12	19	17	~~10~~
	D	0-7	Interior	52	52	40	52	52	34	52	48	30	52	41	27	52	35	25	50	32	23	43	29	21	34	25	17	29	21	15	25	18	20	22	16	17	19	14	15	17	19	~~13~~
			Exposed	52	35	25	48	31	22	41	28	20	35	25	18	32	23	16	29	21	15	26	19	13	22	16	17	19	14	15	16	18	~~13~~	14	16	~~11~~	19	14	~~10~~	17	~~12~~	9
		7-20	Interior	52	45	34	52	37	30	52	33	27	48	29	24	43	27	22	38	24	20	34	22	18	29	19	15	24	16	13	21	14	17	18	18	15	16	16	~~13~~	14	14	~~12~~
			Exposed	42	26	22	36	24	19	33	21	17	29	19	16	27	17	14	24	16	20	22	14	18	19	18	15	16	16	~~13~~	14	~~14~~	~~11~~	18	~~12~~	~~10~~	16	~~11~~	9	14	9	8
		20-27	Interior	70	64	48	70	52	38	70	42	32	70	35	28	63	32	25	56	29	22	50	27	20	40	23	16	33	19	13	29	17	11	25	15	15	22	19	13	19	17	~~12~~
			Exposed	63	32	25	54	29	21	47	26	19	41	23	16	36	21	14	33	19	13	30	17	12	25	15	15	22	19	13	19	17	~~11~~	16	14	~~10~~	14	~~13~~	9	19	~~11~~	8
		27-45	Interior	75	75	61	75	75	50	75	62	42	70	52	35	57	44	31	47	37	28	39	34	25	32	28	20	27	24	17	23	21	14	20	18	12	18	16	16	16	14	14
			Exposed	56	43	31	45	36	27	36	32	24	32	29	21	29	26	19	27	24	17	24	22	15	21	19	12	18	16	16	15	14	13	13	18	~~11~~	18	16	~~10~~	16	14	9
20	B	0-7	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	35	36	36	30	36	36	25	36	31	22	36	27	19	33	24	17	29	21	15
			Exposed	36	36	36	36	36	36	36	36	34	36	36	31	36	36	28	36	36	25	36	33	23	36	28	19	32	24	17	28	20	14	24	18	19	21	16	17	19	14	15
		7-20	Interior	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	34	37	37	31	37	32	26	37	27	22	36	24	19	32	21	17	28	18	15	25	16	13
			Exposed	37	37	37	37	37	33	37	37	30	37	33	27	37	30	24	37	27	22	37	25	20	32	21	17	27	18	15	24	15	19	21	13	17	18	18	15	16	16	~~13~~
		20-27	Interior	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	49	54	54	41	54	41	31	54	33	26	54	28	21	45	25	18	38	22	15	33	19	13
			Exposed	54	54	54	54	54	47	54	52	38	54	43	32	54	36	28	54	33	25	54	30	22	46	25	18	37	21	15	32	19	13	28	16	11	24	14	15	22	19	13
		27-45	Interior	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	54	60	60	40	60	46	32	44	36	27	35	31	23	31	27	20	27	24	17
			Exposed	60	60	60	60	60	60	60	60	50	60	60	42	60	52	36	58	45	32	48	38	28	35	32	23	30	27	19	26	23	16	23	20	14	20	18	12	18	16	16
	C	0-7	Interior	36	36	36	36	36	36	36	36	36	36	36	33	36	36	30	36	36	27	36	35	25	36	30	21	35	25	18	30	22	15	26	19	13	23	17	18	20	15	16
			Exposed	36	36	30	36	36	26	36	34	24	36	30	21	36	27	19	34	25	18	31	23	16	27	19	14	23	16	18	20	14	15	17	19	~~13~~	15	17	~~12~~	20	15	~~10~~
		7-20	Interior	37	37	37	37	37	36	37	37	32	37	35	29	37	32	26	37	29	24	37	26	22	34	22	18	29	19	16	25	16	14	22	14	18	19	19	16	17	17	14
			Exposed	37	32	26	37	28	23	37	25	21	35	23	19	32	21	17	29	19	16	26	17	14	22	15	18	19	19	16	16	16	~~13~~	14	14	~~12~~	19	~~13~~	~~10~~	17	~~11~~	9
		20-27	Interior	54	54	54	54	54	54	54	54	44	54	49	36	54	41	31	54	35	28	54	32	25	50	27	20	41	23	16	34	20	14	30	17	12	26	15	16	23	14	14
			Exposed	54	40	31	54	34	27	54	31	23	52	28	20	45	25	18	40	23	16	36	21	14	30	18	12	26	15	16	22	20	13	19	17	~~12~~	17	15	~~10~~	15	~~13~~	9
		27-45	Interior	60	60	60	60	60	60	60	60	57	60	60	47	60	59	40	60	50	35	56	43	31	40	34	25	32	29	21	28	25	18	24	22	15	22	19	13	19	17	11
			Exposed	60	59	40	60	48	34	51	40	29	42	35	26	35	31	23	32	29	21	29	26	19	25	22	15	21	19	13	18	16	16	16	14	14	14	19	12	19	17	~~10~~
	D	0-7	Interior	36	36	36	36	36	34	36	36	30	36	36	27	36	35	25	36	32	23	36	29	21	34	25	17	29	21	15	25	18	20	22	16	17	19	14	15	17	19	~~13~~
			Exposed	36	35	25	36	31	22	36	28	20	35	25	18	32	23	16	29	21	15	26	19	13	22	16	17	19	14	15	16	18	~~13~~	14	16	~~11~~	19	14	~~10~~	17	~~12~~	9
		7-20	Interior	37	37	34	37	37	30	37	33	27	37	29	24	37	27	22	37	24	20	34	22	18	29	19	15	24	16	13	21	14	17	18	18	15	16	16	~~13~~	14	14	~~12~~
			Exposed	37	26	22	36	24	19	33	21	17	29	19	16	27	17	14	24	16	20	22	14	18	19	18	15	16	16	~~13~~	14	~~14~~	~~11~~	18	~~12~~	~~10~~	16	~~11~~	9	14	9	8
		20-27	Interior	56	56	48	56	52	38	56	42	32	56	35	28	56	32	25	56	29	22	50	27	20	40	23	16	33	19	13	29	17	11	25	15	15	22	19	13	19	17	~~12~~
			Exposed	56	32	25	54	29	21	47	26	19	41	23	16	36	21	14	33	19	13	30	17	12	25	15	15	22	19	13	19	17	~~11~~	16	14	~~10~~	14	~~13~~	9	19	~~11~~	8
		27-45	Interior	62	62	61	62	62	50	62	62	42	62	52	35	57	44	31	47	37	28	39	34	25	32	28	20	27	24	17	23	21	14	20	18	12	18	16	16	16	14	14
			Exposed	56	43	31	45	36	27	36	32	24	32	29	21	29	26	19	27	24	17	24	22	15	21	19	12	18	16	16	15	14	13	13	18	~~11~~	18	16	~~10~~	16	14	9

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 1.25	23 sq.ft	PORTRAIT	CROSS-SLOPE	NXT	NXT COMBO	Solarhooks CT2
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																						
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
30	B	0-7	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	30	35	35	25	35	31	22	35	27	19	33	24	17	29	21	15
			Exposed	35	35	35	35	35	35	35	35	34	35	35	31	35	35	28	35	35	25	35	33	23	35	28	19	32	24	17	28	20	14	24	18	19	21	16	17	19	14	15
		7-20	Interior	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	34	37	37	31	37	32	26	37	27	22	36	24	19	32	21	17	28	18	15	25	16	13
			Exposed	37	37	37	37	37	33	37	37	30	37	33	27	37	30	24	37	27	22	37	25	20	32	21	17	27	18	15	24	15	19	21	13	17	18	18	15	16	16	~~13~~
		20-27	Interior	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	41	44	41	31	44	33	26	44	28	21	44	25	18	38	22	15	33	19	13
			Exposed	44	44	44	44	44	44	44	44	38	44	43	32	44	36	28	44	33	25	44	30	22	44	25	18	37	21	15	32	19	13	28	16	11	24	14	15	22	19	13
		27-45	Interior	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	40	49	46	32	44	36	27	35	31	23	31	27	20	27	24	17
			Exposed	51	51	51	51	51	51	51	51	50	51	51	42	51	51	36	51	45	32	48	38	28	35	32	23	30	27	19	26	23	16	23	20	14	20	18	12	18	16	16
	C	0-7	Interior	35	35	35	35	35	35	35	35	35	35	35	33	35	35	30	35	35	27	35	35	25	35	30	21	35	25	18	30	22	15	26	19	13	23	17	18	20	15	16
			Exposed	35	35	30	35	35	26	35	34	24	35	30	21	35	27	19	34	25	18	31	23	16	27	19	14	23	16	18	20	14	15	17	19	~~13~~	15	17	~~12~~	20	15	~~10~~
		7-20	Interior	37	37	37	37	37	36	37	37	32	37	35	29	37	32	26	37	29	24	37	26	22	34	22	18	29	19	16	25	16	14	22	14	18	19	19	16	17	17	14
			Exposed	37	32	26	37	28	23	37	25	21	35	23	19	32	21	17	29	19	16	26	17	14	22	15	18	19	19	16	16	16	~~13~~	14	14	~~12~~	19	~~13~~	~~10~~	17	~~11~~	9
		20-27	Interior	44	44	44	44	44	44	44	44	44	44	44	36	44	41	31	44	35	28	44	32	25	44	27	20	41	23	16	34	20	14	30	17	12	26	15	16	23	14	14
			Exposed	44	40	31	44	34	27	44	31	23	44	28	20	44	25	18	40	23	16	36	21	14	30	18	12	26	15	16	22	20	13	19	17	~~12~~	17	15	~~10~~	15	~~13~~	9
		27-45	Interior	51	51	51	51	51	51	51	51	51	51	51	47	51	51	40	50	50	35	48	43	31	40	34	25	32	29	21	28	25	18	24	22	15	22	19	13	19	17	11
			Exposed	51	51	40	51	48	34	51	40	29	42	35	26	35	31	23	32	29	21	29	26	19	25	22	15	21	19	13	18	16	16	16	14	14	14	19	12	19	17	~~10~~
	D	0-7	Interior	36	36	36	36	36	34	36	36	30	36	36	27	36	35	25	36	32	23	36	29	21	34	25	17	29	21	15	25	18	20	22	16	17	19	14	15	17	19	~~13~~
			Exposed	36	35	25	36	31	22	36	28	20	35	25	18	32	23	16	29	21	15	26	19	13	22	16	17	19	14	15	16	18	~~13~~	14	16	~~11~~	19	14	~~10~~	17	~~12~~	9
		7-20	Interior	37	37	34	37	37	30	37	33	27	37	29	24	37	27	22	37	24	20	34	22	18	29	19	15	24	16	13	21	14	17	18	18	15	16	16	~~13~~	14	14	~~12~~
			Exposed	37	26	22	36	24	19	33	21	17	29	19	16	27	17	14	24	16	20	22	14	~~13~~	19	18	15	16	16	~~13~~	14	~~14~~	~~11~~	18	~~12~~	~~10~~	16	~~11~~	9	14	9	8
		20-27	Interior	47	47	47	47	47	38	47	42	32	47	35	28	47	32	25	47	29	22	47	27	20	40	23	16	33	19	13	29	17	11	25	15	15	22	19	13	19	17	~~12~~
			Exposed	47	32	25	47	29	21	47	26	19	41	23	16	36	21	14	33	19	13	30	17	12	25	15	15	22	19	13	19	17	~~11~~	16	14	~~10~~	14	~~13~~	9	19	~~11~~	8
		27-45	Interior	53	53	53	53	53	50	53	53	42	53	52	35	51	44	31	47	37	28	39	34	25	32	28	20	27	24	17	23	21	14	20	18	12	18	16	16	16	14	14
			Exposed	53	43	31	45	36	27	36	32	24	32	29	21	29	26	19	27	24	17	24	22	15	21	19	12	18	16	16	15	14	13	13	18	~~11~~	18	16	~~10~~	16	14	9
40	B	0-7	Interior	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	25	29	29	22	29	27	19	29	24	17	29	24	17	29	21	15
			Exposed	29	29	29	29	29	29	29	29	29	29	29	29	29	29	28	29	29	25	29	29	23	29	28	19	29	24	17	28	20	14	24	18	19	21	16	17	19	14	15
		7-20	Interior	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	26	31	27	22	31	24	19	31	21	17	28	18	15	25	16	13
			Exposed	31	31	31	31	31	31	31	31	30	31	31	27	31	30	24	31	27	22	31	25	20	31	21	17	27	18	15	24	15	19	21	13	17	18	18	15	16	16	~~13~~
		20-27	Interior	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	26	38	28	21	38	25	18	37	22	15	33	19	13	33	19	13
			Exposed	38	38	38	38	38	38	38	38	38	38	38	32	38	36	28	38	33	25	38	30	22	38	25	18	37	21	15	32	19	13	28	16	11	24	14	15	22	19	13
		27-45	Interior	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	40	41	41	32	39	36	27	35	31	23	31	27	20	27	24	17
			Exposed	44	44	44	44	44	44	44	44	44	44	44	42	44	44	36	44	44	32	44	38	28	35	32	23	30	27	19	26	23	16	23	20	14	20	18	12	18	16	16
	C	0-7	Interior	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	27	29	29	25	29	29	21	29	25	18	29	22	15	26	19	13	23	17	18	20	15	16
			Exposed	29	29	29	29	29	26	29	29	24	29	29	21	29	27	19	29	25	18	29	23	16	27	19	14	23	16	18	20	14	15	17	19	~~13~~	15	17	~~12~~	20	15	~~10~~
		7-20	Interior	31	31	31	31	31	31	31	31	31	31	31	29	31	31	26	31	29	24	31	26	22	31	22	18	29	19	16	25	16	14	22	14	18	19	19	16	17	17	14
			Exposed	31	31	26	31	28	23	31	25	21	31	23	19	31	21	17	29	19	16	26	17	14	22	15	18	19	19	16	16	16	~~13~~	14	14	~~12~~	19	~~13~~	~~10~~	17	~~11~~	9
		20-27	Interior	38	38	38	38	38	38	38	38	38	38	38	36	38	38	31	38	35	28	38	32	25	38	27	20	38	23	16	34	20	14	30	17	12	26	15	16	23	14	14
			Exposed	38	38	31	38	34	27	38	31	23	38	28	20	38	25	18	38	23	16	36	21	14	30	18	12	26	15	16	22	20	13	19	17	~~12~~	17	15	~~10~~	15	~~13~~	9
		27-45	Interior	44	44	44	44	44	44	44	44	44	44	44	44	44	44	40	42	42	35	41	41	31	38	34	25	32	29	21	28	25	18	24	22	15	22	19	13	19	17	11
			Exposed	44	44	40	44	44	34	44	40	29	42	35	26	35	31	23	32	29	21	29	26	19	25	22	15	21	19	13	18	16	16	16	14	14	14	19	12	19	17	~~10~~
	D	0-7	Interior	31	31	31	31	31	31	31	31	30	31	31	27	31	31	25	31	31	23	31	29	21	31	25	17	29	21	15	25	18	20	22	16	17	19	14	15	17	19	~~13~~
			Exposed	31	31	25	31	31	22	31	28	20	31	25	18	31	23	16	29	21	15	26	19	13	22	16	17	19	14	15	16	18	~~13~~	14	16	~~11~~	19	14	~~10~~	17	~~12~~	9
		7-20	Interior	33	33	33	33	33	30	33	33	27	33	29	24	33	27	22	33	24	20	33	22	18	29	19	15	24	16	13	21	14	17	18	18	15	16	16	~~13~~	14	14	~~12~~
			Exposed	33	26	22	33	24	19	33	21	17	29	19	16	27	17	14	24	16	20	22	14	~~13~~	19	18	15	16	16	~~13~~	14	~~14~~	~~11~~	18	~~12~~	~~10~~	16	~~11~~	9	14	9	8
		20-27	Interior	40	40	40	40	40	38	40	40	32	40	35	28	40	32	25	40	29	22	40	27	20	40	23	16	33	19	13	29	17	11	25	15	15	22	19	13	19	17	~~12~~
			Exposed	40	32	25	40	29	21	40	26	19	40	23	16	36	21	14	33	19	13	30	17	12	25	15	15	22	19	13	19	17	~~11~~	16	14	~~10~~	14	~~13~~	9	19	~~11~~	8
		27-45	Interior	46	46	46	46	46	46	46	46	42	45	45	35	43	43	31	42	37	28	39	34	25	32	28	20	27	24	17	23	21	14	20	18	12	18	16	16	16	14	14
			Exposed	46	43	31	45	36	27	36	32	24	32	29	21	29	26	19	27	24	17	24	22	15	21	19	12	18	16	16	15	14	13	13	18	~~11~~	18	16	~~10~~	16	14	9
50	B	0-7	Interior	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	22	24	24	19	24	24	17	24	21	15
			Exposed	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	24	24	19	24	24	17	24	20	14	24	18	19	21	16	17	19	14	15
		7-20	Interior	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	22	26	26	22	26	24	19	26	21	17	25	18	15	25	16	13
			Exposed	26	26	26	26	26	26	26	26	26	26	26	26	26	26	24	26	26	22	26	25	20	26	21	17	26	18	15	24	15	19	21	13	17	18	18	15	16	16	~~13~~
		20-27	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	26	33	28	21	33	25	18	32	22	15	31	19	13	31	19	13
			Exposed	33	33	33	33	33	33	33	33	33	33	33	32	33	33	28	33	33	25	33	30	22	33	25	18	33	21	15	32	19	13	28	16	11	24	14	15	22	19	13
		27-45	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	38	38	38	36	36	32	34	34	27	32	31	23	31	27	20	27	24	17
			Exposed	39	39	39	39	39	39	39	39	39	39	39	39	39	39	36	39	39	32	39	38	28	35	32	23	30	27	19	26	23	16	23	20	14	20	18	12	18	16	16
	C	0-7	Interior	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	21	24	24	18	24	22	15	24	19	13	23	17	18	20	15	16
			Exposed	24	24	24	24	24	24	24	24	24	24	24	21	24	24	19	24	24	18	24	23	16	24	19	14	23	16	18	20	14	15	17	19	~~13~~	15	17	~~12~~	20	15	~~10~~
		7-20	Interior	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	24	26	26	22	26	22	18	26	19	16	25	16	14	22	14	18	19	19	16	17	17	14
			Exposed	26	26	26	26	26	23	26	25	21	26	23	19	26	21	17	26	19	16	26	17	14	22	15	18	19	19	16	16	16	~~13~~	14	14	~~12~~	19	~~13~~	~~10~~	17	~~11~~	9
		20-27	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	31	33	33	28	33	32	25	33	27	20	32	23	16	31	20	14	30	17	12	26	15	16	23	14	14
			Exposed	33	33	31	33	33	27	33	31	23	33	28	20	33	25	18	33	23	16	33	21	14	30	18	12	26	15	16	22	20	13	19	17	~~12~~	17	15	~~10~~	15	~~13~~	9
		27-45	Interior	39	39	39	39	39	39	39	39	39	39	39	38	38	38	37	37	35	35	35	35	31	33	33	25	31	29	21	28	25	18	24	22	15	22	19	13	19	17	11
			Exposed	39	39	39	39	39	34	39	39	29	39	35	26	35	31	23	32	29	21	29	26	19	25	22	15	21	19	13	18	16	16	16	14	14	14	19	12	19	17	~~10~~
	D	0-7	Interior	26	26	26	26	26	26	26	26	26	26	26	26	26	26	25	26	26	23	26	26	21	26	25	17	26	21	15	25	18	20	22	16	17	19	14	15	17	19	~~13~~
			Exposed	26	26	25	26	26	22	26	26	20	26	25	18	26	23	16	26	21	15	26	19	13	22	16	17	19	14	15	16	18	~~13~~	14	16	~~11~~	19	14	~~10~~	17	~~12~~	9
		7-20	Interior	28	28	28	28	28	28	28	28	27	28	28	24	28	27	22	28	24	20	28	22	18	28	19	15	24	16	13	21	14	17	18	18	15	16	16	~~13~~	14	14	~~12~~
			Exposed	28	26	22	28	24	19	28	21	17	28	19	16	27	17	14	24	16	20	22	14	~~13~~	19	18	15	16	16	~~13~~	14	~~14~~	~~11~~	18	~~12~~	~~10~~	16	~~11~~	9	14	9	8
		20-27	Interior	35	35	35	35	35	35	35	35	32	35	35	28	35	32	25	35	29	22	35	27	20	35	23	16	33	19	13	29	17	11	25	15	15	22	19	13	19	17	~~12~~
			Exposed	35	32	25	35	29	21	35	26	19	35	23	16	35	21	14	33	19	13	30	17	12	25	15	15	22	19	13	19	17	~~11~~	16	14	~~10~~	14	~~13~~	9	19	~~11~~	8
		27-45	Interior	41	41	41	41	41	41	41	41	41	40	40	35	38	38	31	36	36	28	35	34	25	32	28	20	27	24	17	23	21	14	20	18	12	18	16	16	16	14	14
			Exposed	41	41	31	41	36	27	36	32	24	32	29	21	29	26	19	27	24	17	24	22	15	21	19	12	18	16	16	15	14	13	13	18	~~11~~	18	16	~~10~~	16	14	9

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UNIRAC

ASCE 7-16	II	30 ft	Ss = 1.25	23 sq.ft	PORTRAIT	CROSS-SLOPE	NXT	NXT COMBO	Solarhooks CT2
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																						
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
60	B	0-7	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	19	20	20	17	20	20	15
			Exposed	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	19	20	20	17	20	20	14	20	18	19	20	16	17	19	14	15
		7-20	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	19	22	21	17	22	18	15	22	16	13
			Exposed	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	20	22	21	17	22	18	15	22	15	19	21	13	17	18	18	15	16	16	~~13~~
		20-27	Interior	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	26	29	28	21	29	25	18	28	22	15	27	19	13
			Exposed	29	29	29	29	29	29	29	29	29	29	29	29	29	29	28	29	29	25	29	29	22	29	25	18	29	21	15	29	19	13	28	16	11	24	14	15	22	19	13
		27-45	Interior	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	32	32	32	31	31	27	29	29	23	28	27	20	27	24	17
			Exposed	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	32	34	34	28	34	32	23	30	27	19	26	23	16	23	20	14	20	18	12	18	16	16
	C	0-7	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	18	20	20	15	20	19	13	20	17	18	20	15	16
			Exposed	20	20	20	20	20	20	20	20	20	20	20	20	20	19	20	20	18	20	20	16	20	19	14	20	16	18	20	14	15	17	19	~~13~~	15	17	~~12~~	20	15	~~10~~
		7-20	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	18	22	19	16	22	16	14	21	14	18	19	19	16	17	17	14
			Exposed	22	22	22	22	22	22	22	22	21	22	22	19	22	21	17	22	19	16	22	17	14	22	15	18	19	19	16	16	16	~~13~~	14	14	~~12~~	19	~~13~~	~~10~~	17	~~11~~	9
		20-27	Interior	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	28	29	29	25	29	27	20	29	23	16	27	20	14	26	17	12	25	15	16	23	14	14
			Exposed	29	29	29	29	29	27	29	29	23	29	28	20	29	25	18	29	23	16	29	21	14	29	18	12	26	15	16	22	20	13	19	17	~~12~~	17	15	~~10~~	15	~~13~~	9
		27-45	Interior	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	33	33	33	32	32	31	30	30	25	28	28	21	27	25	18	24	22	15	22	19	13	19	17	11
			Exposed	34	34	34	34	34	34	34	34	29	34	34	26	34	31	23	32	29	21	29	26	19	25	22	15	21	19	13	18	16	16	16	14	14	14	19	12	19	17	~~10~~
	D	0-7	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	21	22	22	17	22	21	15	22	18	20	22	16	17	19	14	15	17	19	~~13~~
			Exposed	22	22	22	22	22	22	22	22	20	22	22	18	22	22	16	22	21	15	22	19	13	22	16	17	19	14	15	16	18	~~13~~	14	16	~~11~~	19	14	~~10~~	17	~~12~~	9
		7-20	Interior	24	24	24	24	24	24	24	24	24	24	24	24	24	24	22	24	24	20	24	22	18	24	19	15	23	16	13	21	14	17	18	18	15	16	16	~~13~~	14	14	~~12~~
			Exposed	24	24	22	24	24	19	24	21	17	24	19	16	24	17	14	24	16	20	22	14	18	19	18	15	16	16	~~13~~	14	~~14~~	~~11~~	18	~~12~~	~~10~~	16	~~11~~	9	14	9	8
		20-27	Interior	31	31	31	31	31	31	31	31	31	31	31	28	31	31	25	31	29	22	31	27	20	31	23	16	29	19	13	28	17	11	25	15	15	22	19	13	19	17	~~12~~
			Exposed	31	31	25	31	29	21	31	26	19	31	23	16	31	21	14	31	19	13	30	17	12	25	15	15	22	19	13	19	17	~~11~~	16	14	~~10~~	14	~~13~~	9	19	~~11~~	8
		27-45	Interior	37	37	37	37	37	37	36	36	36	35	35	35	34	34	31	33	33	28	32	32	25	30	28	20	27	24	17	23	21	14	20	18	12	18	16	16	16	14	14
			Exposed	37	37	31	37	36	27	36	32	24	32	29	21	29	26	19	27	24	17	24	22	15	21	19	12	18	16	16	15	14	13	13	18	~~11~~	18	16	~~10~~	16	14	9
70	B	0-7	Interior	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	15
			Exposed	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	14	17	17	19	17	16	17	17	14	15
		7-20	Interior	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	17	19	18	15	19	16	13
			Exposed	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	17	19	18	15	19	15	19	19	13	17	18	18	15	16	16	~~13~~
		20-27	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	21	25	25	18	25	22	15	24	19	13
			Exposed	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	22	25	25	18	25	21	15	25	19	13	25	16	11	24	14	15	22	19	13
		27-45	Interior	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	30	30	29	29	29	28	28	27	27	27	23	26	26	20	24	24	17
			Exposed	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	28	30	30	23	29	27	19	26	23	16	23	20	14	20	18	12	18	16	16
	C	0-7	Interior	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	15	17	17	13	17	17	18	17	15	16
			Exposed	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	16	17	17	14	17	16	18	17	14	15	17	19	~~13~~	15	17	~~12~~	20	15	~~10~~
		7-20	Interior	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	18	19	19	16	19	16	14	19	14	18	18	19	16	17	17	14
			Exposed	19	19	19	19	19	19	19	19	19	19	19	19	19	19	17	19	19	16	19	17	14	19	15	18	19	19	16	16	16	~~13~~	14	14	~~12~~	19	~~13~~	~~10~~	17	~~11~~	9
		20-27	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	20	25	23	16	25	20	14	24	17	12	23	15	16	22	14	14
			Exposed	25	25	25	25	25	25	25	25	23	25	25	20	25	25	18	25	23	16	25	21	14	25	18	12	25	15	16	22	20	13	19	17	~~12~~	17	15	~~10~~	15	~~13~~	9
		27-45	Interior	31	31	31	31	31	31	31	31	31	31	31	31	30	30	30	30	30	30	29	29	29	28	28	25	26	26	21	25	25	18	23	22	15	22	19	13	19	17	11
			Exposed	31	31	31	31	31	31	31	31	29	31	31	26	30	30	23	30	29	21	29	26	19	25	22	15	21	19	13	18	16	16	16	14	14	14	19	12	19	17	~~10~~
	D	0-7	Interior	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	17	19	19	15	19	18	20	19	16	17	19	14	15	17	19	~~13~~
			Exposed	19	19	19	19	19	19	19	19	19	19	19	18	19	19	16	19	19	15	19	19	13	19	16	17	19	14	15	16	18	~~13~~	14	16	~~11~~	19	14	~~10~~	17	~~12~~	9
		7-20	Interior	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	20	21	21	18	21	19	15	21	16	13	20	14	17	18	18	15	16	16	~~13~~	14	14	~~12~~
			Exposed	21	21	21	21	21	19	21	21	17	21	19	16	21	17	14	21	16	20	21	14	18	19	18	15	16	16	~~13~~	14	~~14~~	~~11~~	18	~~12~~	~~10~~	16	~~11~~	9	14	9	8
		20-27	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	25	28	28	22	28	27	20	27	23	16	26	19	13	25	17	11	24	15	15	22	19	13	19	17	~~12~~
			Exposed	28	28	25	28	28	21	28	26	19	28	23	16	28	21	14	28	19	13	28	17	12	25	15	15	22	19	13	19	17	~~11~~	16	14	~~10~~	14	~~13~~	9	19	~~11~~	8
		27-45	Interior	33	33	33	33	33	33	33	33	33	32	32	32	31	31	31	30	30	28	29	29	25	28	28	20	26	24	17	23	21	14	20	18	12	18	16	16	16	14	14
			Exposed	33	33	31	33	33	27	33	32	24	32	29	21	29	26	19	27	24	17	24	22	15	21	19	12	18	16	16	15	14	13	13	18	~~11~~	18	16	~~10~~	16	14	9
80	B	0-7	Interior	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
			Exposed	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	14	15	15	19	15	15	17	15	14	15
		7-20	Interior	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	15	16	16	13
			Exposed	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	15	16	15	19	16	13	17	16	18	15	16	16	~~13~~
		20-27	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	21	22	22	18	22	22	15	22	19	13
			Exposed	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	18	22	21	15	22	19	13	22	16	11	22	14	15	22	19	13
		27-45	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	27	27	27	26	26	26	25	25	23	24	24	20	23	23	17
			Exposed	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	23	27	27	19	26	23	16	23	20	14	20	18	12	18	16	16
	C	0-7	Interior	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	13	15	15	18	15	15	16
			Exposed	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	14	15	15	18	15	14	15	15	19	~~13~~	15	17	~~12~~	20	15	~~10~~
		7-20	Interior	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	14	16	14	18	16	19	16	16	17	14
			Exposed	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	14	16	15	18	16	19	16	16	16	~~13~~	14	14	~~12~~	19	~~13~~	~~10~~	17	~~11~~	9
		20-27	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	20	22	22	16	22	20	14	22	17	12	21	15	16	20	14	14
			Exposed	22	22	22	22	22	22	22	22	22	22	22	20	22	22	18	22	22	16	22	21	14	22	18	12	22	15	16	22	20	13	19	17	~~12~~	17	15	~~10~~	15	~~13~~	9
		27-45	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	27	27	27	27	27	27	25	25	25	24	24	21	23	23	18	22	22	15	21	19	13	19	17	11
			Exposed	28	28	28	28	28	28	28	28	28	28	28	26	28	28	23	27	27	21	27	26	19	25	22	15	21	19	13	18	16	16	16	14	14	14	19	12	19	17	~~10~~
	D	0-7	Interior	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	15	17	17	20	17	16	17	17	14	15	17	19	~~13~~
			Exposed	17	17	17	17	17	17	17	17	17	17	17	17	17	17	16	17	17	15	17	17	13	17	16	17	17	14	15	16	18	~~13~~	14	16	~~11~~	19	14	~~10~~	17	~~12~~	9
		7-20	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	15	18	16	13	18	14	17	18	18	15	16	16	~~13~~	14	14	~~12~~
			Exposed	18	18	18	18	18	18	18	18	17	18	18	16	18	17	14	18	16	20	18	14	18	18	18	15	16	16	~~13~~	14	~~14~~	~~11~~	18	~~12~~	~~10~~	16	~~11~~	9	14	9	8
		20-27	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	22	25	25	20	25	23	16	24	19	13	23	17	11	22	15	15	21	19	13	19	17	~~12~~
			Exposed	25	25	25	25	25	21	25	25	19	25	23	16	25	21	14	25	19	13	25	17	12	25	15	15	22	19	13	19	17	~~11~~	16	14	~~10~~	14	~~13~~	9	19	~~11~~	8
		27-45	Interior	30	30	30	30	30	30	30	30	30	29	29	29	29	29	29	28	28	28	27	27	25	26	26	20	24	24	17	23	21	14	20	18	12	18	16	16	16	14	14
			Exposed	30	30	30	30	30	27	30	30	24	29	29	21	29	26	19	27	24	17	24	22	15	21	19	12	18	16	16	15	14	13	13	18	~~11~~	18	16	~~10~~	16	14	9

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 1.25	23 sq.ft	PORTRAIT	CROSS-SLOPE	NXT	NXT COMBO	Solarhooks CT2
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																						
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
90	B	0-7	Interior	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
			Exposed	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	19	13	13	17	13	13	15
		7-20	Interior	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	13
			Exposed	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	19	15	13	17	15	18	15	15	16	~~13~~
		20-27	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	18	20	20	15	20	19	13
			Exposed	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	18	20	20	15	20	19	13	20	16	11	20	14	15	20	19	13
		27-45	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	24	24	24	23	23	23	22	22	20	21	21	17
			Exposed	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	23	25	25	19	24	23	16	23	20	14	20	18	12	18	16	16
	C	0-7	Interior	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	18	13	13	16
			Exposed	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	18	13	13	15	13	19	~~13~~	13	17	~~12~~	20	15	~~10~~
		7-20	Interior	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	14	15	14	18	15	19	16	15	17	14
			Exposed	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	14	15	15	18	15	19	16	15	16	~~13~~	14	14	~~12~~	19	~~13~~	~~10~~	17	~~11~~	9
		20-27	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	16	20	20	14	20	17	12	19	15	16	18	14	14
			Exposed	20	20	20	20	20	20	20	20	20	20	20	20	20	20	18	20	20	16	20	20	14	20	18	12	20	15	16	20	20	13	19	17	~~12~~	17	15	~~10~~	15	~~13~~	9
		27-45	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	23	23	23	22	22	21	21	21	18	20	20	15	19	19	13	19	17	11
			Exposed	25	25	25	25	25	25	25	25	25	25	25	25	25	25	23	25	25	21	25	25	19	23	22	15	21	19	13	18	16	16	16	14	14	14	19	12	19	17	~~10~~
	D	0-7	Interior	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	20	15	15	17	15	14	15	15	19	~~13~~
			Exposed	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	13	15	15	17	15	14	15	15	18	~~13~~	14	16	~~11~~	19	14	~~10~~	17	~~12~~	9
		7-20	Interior	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	15	16	16	13	16	14	17	16	18	15	16	16	~~13~~	14	14	~~12~~
			Exposed	16	16	16	16	16	16	16	16	16	16	16	16	16	16	14	16	16	20	16	14	18	16	18	15	16	16	~~13~~	14	~~14~~	~~11~~	18	~~12~~	~~10~~	16	~~11~~	9	14	9	8
		20-27	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	20	22	22	16	22	19	13	21	17	11	20	15	15	20	19	13	19	17	~~12~~
			Exposed	22	22	22	22	22	21	22	22	19	22	22	16	22	21	14	22	19	13	22	17	12	22	15	15	22	19	13	19	17	~~11~~	16	14	~~10~~	14	~~13~~	9	19	~~11~~	8
		27-45	Interior	28	28	28	28	28	28	28	28	28	27	27	27	26	26	26	26	26	26	25	25	25	24	24	20	23	23	17	21	21	14	20	18	12	18	16	16	16	14	14
			Exposed	28	28	28	28	28	27	28	28	24	27	27	21	26	26	19	26	24	17	24	22	15	21	19	12	18	16	16	15	14	13	13	18	~~11~~	18	16	~~10~~	16	14	9
100	B	0-7	Interior	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
			Exposed	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	18	12	12	17	12	12	15
		7-20	Interior	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
			Exposed	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	19	13	13	17	13	18	15	13	16	~~13~~
		20-27	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	15	18	18	13
			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	15	18	18	13	18	16	11	18	14	15	18	19	13
		27-45	Interior	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	22	22	22	21	21	21	21	21	20	20	20	17
			Exposed	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	19	22	22	16	21	20	14	20	18	12	18	16	16
	C	0-7	Interior	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	18	12	12	16
			Exposed	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	18	12	12	15	12	18	~~13~~	12	17	~~12~~	18	15	~~10~~
		7-20	Interior	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	18	13	19	16	13	17	14
			Exposed	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	18	13	19	16	13	16	~~13~~	13	14	~~12~~	19	~~13~~	~~10~~	17	~~11~~	9
		20-27	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	16	18	18	14	18	17	12	18	15	16	17	14	14
			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	16	18	18	14	18	18	12	18	15	16	18	20	13	18	17	~~12~~	17	15	~~10~~	15	~~13~~	9
		27-45	Interior	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	22	22	22	21	21	21	20	20	18	19	19	15	18	18	13	17	17	11
			Exposed	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	21	23	23	19	22	22	15	21	19	13	18	16	16	16	14	14	14	19	12	19	17	~~10~~
	D	0-7	Interior	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	20	13	13	17	13	13	15	13	19	~~13~~
			Exposed	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	17	13	13	15	13	18	~~13~~	13	16	~~11~~	19	14	~~10~~	17	~~12~~	9
		7-20	Interior	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	13	15	14	17	15	18	15	14	16	~~13~~	14	14	~~12~~
			Exposed	15	15	15	15	15	15	15	15	15	15	15	15	15	15	14	15	15	20	15	14	18	15	18	15	15	16	~~13~~	14	~~14~~	~~11~~	18	~~12~~	~~10~~	16	~~11~~	9	14	9	8
		20-27	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	16	20	19	13	20	17	11	19	15	15	18	19	13	17	17	~~12~~
			Exposed	20	20	20	20	20	20	20	20	19	20	20	16	20	20	14	20	19	13	20	17	12	20	15	15	20	19	13	19	17	~~11~~	16	14	~~10~~	14	~~13~~	9	19	~~11~~	8
		27-45	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	24	24	24	23	23	23	22	22	20	21	21	17	20	20	14	19	18	12	18	16	16	16	14	14
			Exposed	25	25	25	25	25	25	25	25	24	25	25	21	25	25	19	24	24	17	23	22	15	21	19	12	18	16	16	15	14	13	13	18	~~11~~	18	16	~~10~~	16	14	9

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 1.25	23 sq.ft	LANDSCAPE	CROSS-SLOPE	NXT	NXT COMBO	Solarhooks CT2
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																												
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																												
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
0	B	0-7	Interior	101	101	101	101	101	101	101	101	96	101	101	91	101	101	87	101	97	83	101	93	80	100	86	59	93	80	50	87	62	44	81	54	38	65	47	34	58	42	30
			Exposed	101	101	87	101	96	82	101	91	71	101	87	60	96	83	55	92	80	50	88	64	45	82	54	38	64	46	33	55	40	29	48	35	25	42	31	33	38	28	29
		7-20	Interior	102	102	102	102	102	99	102	102	93	102	97	88	102	92	84	102	88	80	98	84	61	89	63	52	83	54	44	76	46	38	62	41	34	55	36	30	49	32	26
			Exposed	102	92	83	102	87	68	95	82	59	90	64	53	86	58	48	83	53	44	80	49	40	63	41	34	54	35	29	46	30	25	41	27	33	36	23	29	32	32	26
		20-27	Interior	102	102	102	102	102	102	102	102	102	102	102	100	102	101	94	102	96	90	102	92	85	102	84	62	95	65	51	89	56	42	84	49	35	80	43	30	66	38	26
			Exposed	102	101	94	102	95	88	102	90	83	102	85	66	99	81	56	94	64	50	90	59	44	84	50	36	79	42	29	63	37	25	55	32	22	48	28	19	43	25	26
		27-45	Interior	103	103	103	103	103	103	103	103	103	103	103	103	103	103	99	103	103	95	103	101	90	103	93	83	94	86	64	87	81	53	81	61	45	60	54	39	54	48	34
			Exposed	103	103	99	103	103	93	103	99	89	103	94	84	98	90	81	93	86	63	89	82	56	81	62	46	59	53	38	51	46	32	45	40	27	40	36	24	35	32	21
	C	0-7	Interior	101	101	90	101	99	85	101	94	81	101	90	65	100	86	59	95	82	53	91	77	49	85	58	41	76	50	35	59	43	31	52	38	27	46	33	36	40	30	32
			Exposed	99	86	58	94	81	52	90	68	47	85	60	42	82	54	38	73	49	35	62	45	32	52	38	27	45	33	35	39	28	30	34	25	27	30	33	23	26	29	21
		7-20	Interior	102	96	87	102	90	82	100	85	63	92	81	57	89	63	52	85	57	47	82	52	43	69	44	36	58	38	31	50	33	27	44	29	24	38	25	31	34	34	28
			Exposed	89	62	51	85	56	46	81	50	41	72	45	37	63	41	34	57	37	31	52	34	28	44	29	24	38	25	31	33	32	27	29	28	23	38	25	21	34	22	18
		20-27	Interior	102	102	98	102	99	92	102	93	87	102	88	82	102	84	62	97	80	55	93	63	49	87	53	39	81	46	32	69	39	27	59	34	24	52	30	21	46	27	28
			Exposed	102	84	61	96	79	53	91	60	46	88	54	40	84	49	36	81	45	32	75	41	28	59	35	24	51	30	20	44	26	27	38	34	23	34	30	21	30	27	18
		27-45	Interior	103	103	103	103	103	97	103	103	92	103	97	87	102	93	83	97	89	80	92	85	61	84	71	50	64	57	41	55	49	35	48	43	30	43	38	26	38	34	22
			Exposed	102	93	83	96	88	73	90	83	58	85	79	51	81	62	46	63	56	41	58	52	37	49	44	30	42	37	25	36	32	21	32	28	28	28	25	24	25	34	21
	D	0-7	Interior	101	96	83	101	91	72	101	87	60	96	83	54	92	79	49	88	63	45	84	58	41	71	49	35	57	42	30	50	36	26	43	32	34	38	28	30	34	25	27
			Exposed	91	78	49	87	62	44	83	55	39	76	50	35	62	45	32	57	41	29	52	38	27	44	32	34	38	27	29	33	36	25	28	31	22	25	28	20	34	25	17
		7-20	Interior	102	87	74	95	82	59	90	64	53	86	58	48	83	52	43	79	48	39	68	44	36	56	37	31	48	32	26	42	27	34	37	24	30	32	32	26	29	28	24
			Exposed	82	52	43	77	47	38	64	42	35	58	38	31	52	34	28	48	31	26	44	29	24	37	24	30	32	31	26	27	27	23	36	24	20	32	21	17	28	19	15
		20-27	Interior	102	95	89	102	90	84	102	85	65	98	81	56	93	63	49	90	58	43	86	53	39	81	45	31	65	38	26	56	33	23	49	29	20	43	26	26	39	34	24
			Exposed	93	63	49	89	56	42	85	51	37	82	46	32	75	41	29	64	38	26	59	35	24	50	29	20	43	25	26	37	33	23	32	29	20	28	25	17	38	23	15
		27-45	Interior	103	103	94	103	99	89	103	94	84	98	89	80	93	85	62	88	82	55	84	69	49	62	56	40	53	48	34	46	41	28	40	36	24	36	32	21	32	28	28
			Exposed	92	85	61	87	81	53	82	63	47	64	57	42	58	52	37	53	47	33	48	43	30	41	37	25	35	31	21	30	27	26	27	24	22	23	32	20	32	28	17
10	B	0-7	Interior	90	90	90	90	90	90	90	90	90	90	90	90	90	90	87	90	90	83	90	90	80	90	86	59	90	80	50	87	62	44	81	54	38	65	47	34	58	42	30
			Exposed	90	90	87	90	90	82	90	90	71	90	87	60	90	83	55	90	80	50	88	64	45	82	54	38	64	46	33	55	40	29	48	35	25	42	31	33	38	28	29
		7-20	Interior	91	91	91	91	91	91	91	91	91	91	91	88	91	91	84	91	88	80	91	84	61	89	63	52	83	54	44	76	46	38	62	41	34	55	36	30	49	32	26
			Exposed	91	91	83	91	87	68	91	82	59	90	64	53	86	58	48	83	53	44	80	49	40	63	41	34	54	35	29	46	30	25	41	27	33	36	23	29	32	32	26
		20-27	Interior	99	99	99	99	99	99	99	99	99	99	99	99	99	99	94	99	96	90	99	92	85	99	84	62	95	65	51	89	56	42	84	49	35	80	43	30	66	38	26
			Exposed	99	99	94	99	95	88	99	90	83	99	85	66	99	81	56	94	64	50	90	59	44	84	50	36	79	42	29	63	37	25	55	32	22	48	28	19	43	25	26
		27-45	Interior	101	101	101	101	101	101	101	101	101	101	101	101	101	101	99	101	101	95	101	101	90	101	93	83	94	86	64	87	81	53	81	61	45	60	54	39	54	48	34
			Exposed	101	101	99	101	101	93	101	99	89	101	94	84	98	90	81	93	86	63	89	82	56	81	62	46	59	53	38	51	46	32	45	40	27	40	36	24	35	32	21
	C	0-7	Interior	90	90	90	90	90	85	90	90	81	90	90	65	90	86	59	90	82	53	90	77	49	85	58	41	76	50	35	59	43	31	52	38	27	46	33	36	40	30	32
			Exposed	90	86	58	90	81	52	90	68	47	85	60	42	82	54	38	73	49	35	62	45	32	52	38	27	45	33	35	39	28	30	34	25	27	30	33	23	26	29	21
		7-20	Interior	91	91	87	91	90	82	91	85	63	91	81	57	89	63	52	85	57	47	82	52	43	69	44	36	58	38	31	50	33	27	44	29	24	38	25	31	34	34	28
			Exposed	89	62	51	85	56	46	81	50	41	72	45	37	63	41	34	57	37	31	52	34	28	44	29	24	38	25	31	33	32	27	29	28	23	38	25	21	34	22	18
		20-27	Interior	99	99	98	99	99	92	99	93	87	99	88	82	99	84	62	97	80	55	93	63	49	87	53	39	81	46	32	69	39	27	59	34	24	52	30	21	46	27	28
			Exposed	99	84	61	96	79	53	91	60	46	88	54	40	84	49	36	81	45	32	75	41	28	59	35	24	51	30	20	44	26	27	38	34	23	34	30	21	30	27	18
		27-45	Interior	101	101	101	101	101	97	101	101	92	101	97	87	101	93	83	97	89	80	92	85	61	84	71	50	64	57	41	55	49	35	48	43	30	43	38	26	38	34	22
			Exposed	101	93	83	96	88	73	90	83	58	85	79	51	81	62	46	63	56	41	58	52	37	49	44	30	42	37	25	36	32	21	32	28	28	28	25	24	25	34	21
	D	0-7	Interior	90	90	83	90	90	72	90	87	60	90	83	54	90	79	49	88	63	45	84	58	41	71	49	35	57	42	30	50	36	26	43	32	34	38	28	30	34	25	27
			Exposed	90	78	49	87	62	44	83	55	39	76	50	35	62	45	32	57	41	29	52	38	27	44	32	34	38	27	29	33	36	25	28	31	22	25	28	20	34	25	17
		7-20	Interior	91	87	74	91	82	59	90	64	53	86	58	48	83	52	43	79	48	39	68	44	36	56	37	31	48	32	26	42	27	34	37	24	30	32	32	26	29	28	24
			Exposed	82	52	43	77	47	38	64	42	35	58	38	31	52	34	28	48	31	26	44	29	24	37	24	30	32	31	26	27	27	23	36	24	20	32	21	17	28	19	15
		20-27	Interior	100	95	89	100	90	84	100	85	65	98	81	56	93	63	49	90	58	43	86	53	39	81	45	31	65	38	26	56	33	23	49	29	20	43	26	26	39	34	24
			Exposed	93	63	49	89	56	42	85	51	37	82	46	32	75	41	29	64	38	26	59	35	24	50	29	20	43	25	26	37	33	23	32	29	20	28	25	17	38	23	15
		27-45	Interior	102	102	94	102	99	89	102	94	84	98	89	80	93	85	62	88	82	55	84	69	49	62	56	40	53	48	34	46	41	28	40	36	24	36	32	21	32	28	28
			Exposed	92	85	61	87	81	53	82	63	47	64	57	42	58	52	37	53	47	33	48	43	30	41	37	25	35	31	21	30	27	26	27	24	22	23	32	20	32	28	17
20	B	0-7	Interior	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	59	71	71	50	71	62	44	71	54	38	65	47	34	58	42	30
			Exposed	71	71	71	71	71	71	71	71	71	71	71	60	71	71	55	71	71	50	71	64	45	71	54	38	64	46	33	55	40	29	48	35	25	42	31	33	38	28	29
		7-20	Interior	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	61	71	63	52	71	54	44	71	46	38	62	41	34	55	36	30	49	32	26
			Exposed	71	71	71	71	71	68	71	71	59	71	64	53	71	58	48	71	53	44	71	49	40	63	41	34	54	35	29	46	30	25	41	27	33	36	23	29	32	32	26
		20-27	Interior	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	90	92	92	85	92	84	62	92	65	51	89	56	42	84	49	35	80	43	30	66	38	26
			Exposed	92	92	92	92	92	88	92	90	83	92	85	66	92	81	56	92	64	50	90	59	44	84	50	36	79	42	29	63	37	25	55	32	22	48	28	19	43	25	26
		27-45	Interior	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	90	95	93	83	94	86	64	87	81	53	81	61	45	60	54	39	54	48	34
			Exposed	95	95	95	95	95	93	95	95	89	95	94	84	95	90	81	93	86	63	89	82	56	81	62	46	59	53	38	51	46	32	45	40	27	40	36	24	35	32	21
	C	0-7	Interior	71	71	71	71	71	71	71	71	71	71	71	65	71	71	59	71	71	53	71	71	49	71	58	41	71	50	35	59	43	31	52	38	27	46	33	36	40	30	32
			Exposed	71	71	58	71	71	52	71	68	47	71	60	42	71	54	38	71	49	35	62	45	32	52	38	27	45	33	35	39	28	30	34	25	27	30	33	23	26	29	21
		7-20	Interior	71	71	71	71	71	71	71	71	63	71	71	57	71	63	52	71	57	47	71	52	43	69	44	36	58	38	31	50	33	27	44	29	24	38	25	31	34	34	28
			Exposed	71	62	51	71	56	46	71	50	41	71	45	37	63	41	34	57	37	31	52	34	28	44	29	24	38	25	31	33	32	27	29	28	23	38	25	21	34	22	18
		20-27	Interior	92	92	92	92	92	92	92	92	87	92	88	82	92	84	62	92	80	55	92	63	49	87	53	39	81	46	32	69	39	27	59	34	24	52	30	21	46	27	28
			Exposed	92	84	61	92	79	53	91	60	46	88	54	40	84	49	36	81	45	32	75	41	28	59	35	24	51	30	20	44	26	27	38	34	23	34	30	21	30	27	18
		27-45	Interior	95	95	95	95	95	95	95	95	92	95	95	87	95	93	83	95	89	80	92	85	61	84	71	50	64	57	41	55	49	35	48	43	30	43	38	26	38	34	22
			Exposed	95	93	83	95	88	73	90	83	58	85	79	51	81	62	46	63	56	41	58	52	37	49	44	30	42	37	25	36	32	21	32	28	28	28	25	24	25	34	21
	D	0-7	Interior	71	71	71	71	71	71	71	71	60	71	71	54	71	71	49	71	63	45	71	58	41	71	49	35	57	42	30	50	36	26	43	32	34	38	28	30	34	25	27
			Exposed	71	71	49	71	62	44	71	55	39	71	50	35	62	45	32	57	41	29	52	38	27	44	32	34	38	27	29	33	36	25	28	31	22	25	28	20	34	25	17
		7-20	Interior	71	71	71	71	71	59	71	64	53	71	58	48	71	52	43	71	48	39	68	44	36	56	37	31	48	32	26	42	27	34	37	24	30	32	32	26	29	28	24
			Exposed	71	52	43	71	47	38	64	42	35	58	38	31	52	34	28	48	31	26	44	29	24	37	24	30	32	31	26	27	27	23	36	24	20	32	21	17	28	19	15
		20-27	Interior	93	93	89	93	90	84	93	85	65	93	81	56	93	63	49	90	58	43	86	53	39	81	45	31	65	38	26	56	33	23	49	29	20	43	26	26	39	34	24
			Exposed	93	63	49	89	56	42	85	51	37	82	46	32	75	41	29	64	38	26	59	35	24	50	29	20	43	25	26	37	33	23	32	29	20	28	25	17	38	23	15
		27-45	Interior	96	96	94	96	96	89	96	94	84	96	89	80	93	85	62	88	82	55	84	69	49	62	56	40	53	48	34	46	41	28	40	36	24	36	32	21	32	28	28
			Exposed	92	85	61	87	81	53	82	63	47	64	57	42	58	52	37	53	47	33	48	43	30	41	37	25	35	31	21	30	27	26	27	24	22	23	32	20	32	28	17

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 1.25	23 sq.ft	LANDSCAPE	CROSS-SLOPE	NXT	NXT COMBO	Solarhooks CT2
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																								
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																								
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
30	B	0-7	Interior	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	59	69	69	50	69	62	44	69	54	38	65	47	34	58	42	30
			Exposed	69	69	69	69	69	69	69	69	69	69	69	60	69	69	55	69	69	50	69	64	45	69	54	38	64	46	33	55	40	29	48	35	25	42	31	33	38	28	29
		7-20	Interior	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	61	71	63	52	71	54	44	71	46	38	62	41	34	55	36	30	49	32	26
			Exposed	71	71	71	71	71	68	71	71	59	71	64	53	71	58	48	71	53	44	71	49	40	63	41	34	54	35	29	46	30	25	41	27	33	36	23	29	32	32	26
		20-27	Interior	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	84	62	85	65	51	85	56	42	84	49	35	80	43	30	66	38	26
			Exposed	85	85	85	85	85	85	85	85	83	85	85	66	85	81	56	85	64	50	85	59	44	84	50	36	79	42	29	63	37	25	55	32	22	48	28	19	43	25	26
		27-45	Interior	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	83	90	86	64	87	81	53	81	61	45	60	54	39	54	48	34
			Exposed	90	90	90	90	90	90	90	90	89	90	90	84	90	90	81	90	86	63	89	82	56	81	62	46	59	53	38	51	46	32	45	40	27	40	36	24	35	32	21
	C	0-7	Interior	69	69	69	69	69	69	69	69	69	69	69	65	69	69	59	69	69	53	69	69	49	69	58	41	69	50	35	59	43	31	52	38	27	46	33	36	40	30	32
			Exposed	69	69	58	69	69	52	69	68	47	69	60	42	69	54	38	69	49	35	62	45	32	52	38	27	45	33	35	39	28	30	34	25	27	30	33	~~23~~	26	29	~~21~~
		7-20	Interior	71	71	71	71	71	71	71	71	63	71	71	57	71	63	52	71	57	47	71	52	43	69	44	36	58	38	31	50	33	27	44	29	24	38	25	31	34	34	28
			Exposed	71	62	51	71	56	46	71	50	41	71	45	37	63	41	34	57	37	31	52	34	28	44	29	24	38	25	31	33	32	27	29	28	23	38	25	~~21~~	34	~~22~~	~~18~~
		20-27	Interior	85	85	85	85	85	85	85	85	85	85	85	82	85	84	62	85	80	55	85	63	49	85	53	39	81	46	32	69	39	27	59	34	24	52	30	21	46	27	28
			Exposed	85	84	61	85	79	53	85	60	46	85	54	40	84	49	36	81	45	32	75	41	28	59	35	24	51	30	20	44	26	27	38	34	23	34	30	21	30	27	~~18~~
		27-45	Interior	90	90	90	90	90	90	90	90	90	90	90	87	90	90	83	90	89	80	90	85	61	84	71	50	64	57	41	55	49	35	48	43	30	43	38	26	38	34	22
			Exposed	90	90	83	90	88	73	90	83	58	85	79	51	81	62	46	63	56	41	58	52	37	49	44	30	42	37	25	36	32	21	32	28	28	28	25	24	25	34	21
	D	0-7	Interior	71	71	71	71	71	71	71	71	60	71	71	54	71	71	49	71	63	45	71	58	41	71	49	35	57	42	30	50	36	26	43	32	34	38	28	30	34	25	27
			Exposed	71	71	49	71	62	44	71	55	39	71	50	35	62	45	32	57	41	29	52	38	27	44	32	34	38	27	29	33	36	25	28	31	~~22~~	25	28	~~20~~	34	25	~~17~~
		7-20	Interior	71	71	71	71	71	59	71	64	53	71	58	48	71	52	43	71	48	39	68	44	36	56	37	31	48	32	26	42	27	34	37	24	30	32	32	26	29	28	24
			Exposed	71	52	43	71	47	38	64	42	35	58	38	31	52	34	28	48	31	26	44	29	24	37	24	30	32	31	26	27	27	~~23~~	36	24	~~20~~	32	~~21~~	~~17~~	28	~~19~~	~~15~~
		20-27	Interior	87	87	87	87	87	84	87	85	65	87	81	56	87	63	49	87	58	43	86	53	39	81	45	31	65	38	26	56	33	23	49	29	20	43	26	26	39	34	24
			Exposed	87	63	49	87	56	42	85	51	37	82	46	32	75	41	29	64	38	26	59	35	24	50	29	20	43	25	26	37	33	23	32	29	20	28	25	~~17~~	38	~~23~~	~~15~~
		27-45	Interior	91	91	91	91	91	89	91	91	84	91	89	80	91	85	62	88	82	55	84	69	49	62	56	40	53	48	34	46	41	28	40	36	24	36	32	21	32	28	28
			Exposed	91	85	61	87	81	53	82	63	47	64	57	42	58	52	37	53	47	33	48	43	30	41	37	25	35	31	21	30	27	26	27	24	22	23	32	20	32	28	~~17~~
40	B	0-7	Interior	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	50	57	57	44	57	54	38	57	47	34	57	42	30
			Exposed	57	57	57	57	57	57	57	57	57	57	57	57	57	57	55	57	57	50	57	57	45	57	54	38	57	46	33	55	40	29	48	35	25	42	31	33	38	28	29
		7-20	Interior	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	52	60	54	44	60	46	38	60	41	34	55	36	30	49	32	26
			Exposed	60	60	60	60	60	60	60	60	59	60	60	53	60	58	48	60	53	44	60	49	40	60	41	34	54	35	29	46	30	25	41	27	33	36	23	29	32	32	26
		20-27	Interior	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	62	74	65	51	74	56	42	74	49	35	74	43	30	66	38	26
			Exposed	74	74	74	74	74	74	74	74	74	74	74	66	74	74	56	74	64	50	74	59	44	74	50	36	74	42	29	63	37	25	55	32	22	48	28	19	43	25	26
		27-45	Interior	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	83	85	85	64	79	79	53	73	61	45	60	54	39	54	48	34
			Exposed	85	85	85	85	85	85	85	85	85	85	85	84	85	85	81	85	85	63	85	82	56	81	62	46	59	53	38	51	46	32	45	40	27	40	36	24	35	32	21
	C	0-7	Interior	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	53	57	57	49	57	57	41	57	50	35	57	43	31	52	38	27	46	33	36	40	30	32
			Exposed	57	57	57	57	57	52	57	57	47	57	57	42	57	54	38	57	49	35	57	45	32	52	38	27	45	33	35	39	28	30	34	25	27	30	33	~~23~~	26	29	~~21~~
		7-20	Interior	60	60	60	60	60	60	60	60	60	60	60	57	60	60	52	60	57	47	60	52	43	60	44	36	58	38	31	50	33	27	44	29	24	38	25	31	34	34	28
			Exposed	60	60	51	60	56	46	60	50	41	60	45	37	60	41	34	57	37	31	52	34	28	44	29	24	38	25	31	33	32	27	29	28	23	38	25	~~21~~	34	~~22~~	~~18~~
		20-27	Interior	74	74	74	74	74	74	74	74	74	74	74	74	74	74	62	74	74	55	74	63	49	74	53	39	74	46	32	69	39	27	59	34	24	52	30	21	46	27	28
			Exposed	74	74	61	74	74	53	74	60	46	74	54	40	74	49	36	74	45	32	74	41	28	59	35	24	51	30	20	44	26	27	38	34	23	34	30	21	30	27	~~18~~
		27-45	Interior	85	85	85	85	85	85	85	85	85	85	85	85	85	85	83	85	85	80	84	84	61	77	71	50	64	57	41	55	49	35	48	43	30	43	38	26	38	34	22
			Exposed	85	85	83	85	85	73	85	83	58	85	79	51	81	62	46	63	56	41	58	52	37	49	44	30	42	37	25	36	32	21	32	28	28	28	25	24	25	34	21
	D	0-7	Interior	61	61	61	61	61	61	61	61	60	61	61	54	61	61	49	61	61	45	61	58	41	61	49	35	57	42	30	50	36	26	43	32	34	38	28	30	34	25	27
			Exposed	61	61	49	61	61	44	61	55	39	61	50	35	61	45	32	57	41	29	52	38	27	44	32	34	38	27	29	33	36	25	28	31	~~22~~	25	28	~~20~~	34	25	~~17~~
		7-20	Interior	65	65	65	65	65	59	65	64	53	65	58	48	65	52	43	65	48	39	65	44	36	56	37	31	48	32	26	42	27	34	37	24	30	32	32	26	29	28	24
			Exposed	65	52	43	65	47	38	64	42	35	58	38	31	52	34	28	48	31	26	44	29	24	37	24	30	32	31	26	27	27	~~23~~	36	24	~~20~~	32	~~21~~	~~17~~	28	~~19~~	~~15~~
		20-27	Interior	79	79	79	79	79	79	79	79	65	79	79	56	79	63	49	79	58	43	79	53	39	79	45	31	65	38	26	56	33	23	49	29	20	43	26	26	39	34	24
			Exposed	79	63	49	79	56	42	79	51	37	79	46	32	75	41	29	64	38	26	59	35	24	50	29	20	43	25	26	37	33	23	32	29	20	28	25	~~17~~	38	~~23~~	~~15~~
		27-45	Interior	87	87	87	87	87	87	87	87	84	87	87	80	87	85	62	85	82	55	83	69	49	62	56	40	53	48	34	46	41	28	40	36	24	36	32	21	32	28	28
			Exposed	87	85	61	87	81	53	82	63	47	64	57	42	58	52	37	53	47	33	48	43	30	41	37	25	35	31	21	30	27	26	27	24	22	23	32	20	32	28	~~17~~
50	B	0-7	Interior	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	44	47	47	38	47	47	34	47	42	30
			Exposed	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	45	47	47	38	47	46	33	47	40	29	47	35	25	42	31	33	38	28	29
		7-20	Interior	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	44	50	46	38	50	41	34	50	36	30	49	32	26
			Exposed	50	50	50	50	50	50	50	50	50	50	50	50	50	50	48	50	50	44	50	49	40	50	41	34	50	35	29	46	30	25	41	27	33	36	23	29	32	32	26
		20-27	Interior	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	62	64	64	51	64	56	42	64	49	35	63	43	30	60	38	26
			Exposed	64	64	64	64	64	64	64	64	64	64	64	64	64	64	56	64	64	50	64	59	44	64	50	36	64	42	29	63	37	25	55	32	22	48	28	19	43	25	26
		27-45	Interior	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	72	72	64	67	67	53	63	61	45	60	54	39	54	48	34
			Exposed	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	63	75	75	56	75	62	46	59	53	38	51	46	32	45	40	27	40	36	24	35	32	21
	C	0-7	Interior	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	41	47	47	35	47	43	31	47	38	27	46	33	36	40	30	32
			Exposed	47	47	47	47	47	47	47	47	47	47	47	42	47	47	38	47	47	35	47	45	32	47	38	27	45	33	35	39	28	30	34	25	27	30	33	~~23~~	26	29	~~21~~
		7-20	Interior	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	47	50	50	43	50	44	36	50	38	31	49	33	27	44	29	24	38	25	31	34	34	28
			Exposed	50	50	50	50	50	46	50	50	41	50	45	37	50	41	34	50	37	31	50	34	28	44	29	24	38	25	31	33	32	27	29	28	23	38	25	~~21~~	34	~~22~~	~~18~~
		20-27	Interior	64	64	64	64	64	64	64	64	64	64	64	64	64	64	62	64	64	55	64	63	49	64	53	39	64	46	32	61	39	27	58	34	24	52	30	21	46	27	28
			Exposed	64	64	61	64	64	53	64	60	46	64	54	40	64	49	36	64	45	32	64	41	28	59	35	24	51	30	20	44	26	27	38	34	23	34	30	21	30	27	~~18~~
		27-45	Interior	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	74	74	74	71	71	61	65	65	50	61	57	41	55	49	35	48	43	30	43	38	26	38	34	22
			Exposed	75	75	75	75	75	73	75	75	58	75	75	51	75	62	46	63	56	41	58	52	37	49	44	30	42	37	25	36	32	21	32	28	28	28	25	24	25	34	21
	D	0-7	Interior	51	51	51	51	51	51	51	51	51	51	51	51	51	51	49	51	51	45	51	51	41	51	49	35	51	42	30	50	36	26	43	32	34	38	28	30	34	25	27
			Exposed	51	51	49	51	51	44	51	51	39	51	50	35	51	45	32	51	41	29	51	38	27	44	32	34	38	27	29	33	36	25	28	31	~~22~~	25	28	~~20~~	34	25	~~17~~
		7-20	Interior	56	56	56	56	56	56	56	56	53	56	56	48	56	52	43	56	48	39	56	44	36	54	37	31	48	32	26	42	27	34	37	24	30	32	32	26	29	28	24
			Exposed	56	52	43	56	47	38	56	42	35	56	38	31	52	34	28	48	31	26	44	29	24	37	24	30	32	31	26	27	27	~~23~~	36	24	~~20~~	32	~~21~~	~~17~~	28	~~19~~	~~15~~
		20-27	Interior	69	69	69	69	69	69	69	69	65	69	69	56	69	63	49	69	58	43	69	53	39	68	45	31	65	38	26	56	33	23	49	29	20	43	26	26	39	34	24
			Exposed	69	63	49	69	56	42	69	51	37	69	46	32	69	41	29	64	38	26	59	35	24	50	29	20	43	25	26	37	33	23	32	29	20	28	25	~~17~~	38	~~23~~	~~15~~
		27-45	Interior	80	80	80	80	80	80	80	80	80	80	80	80	77	77	62	74	74	55	70	69	49	62	56	40	53	48	34	46	41	28	40	36	24	36	32	21	32	28	28
			Exposed	80	80	61	80	80	53	80	63	47	64	57	42	58	52	37	53	47	33	48	43	30	41	37	25	35	31	21	30	27	26	27	24	22	23	32	20	32	28	~~17~~

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 1.25	23 sq.ft	LANDSCAPE	CROSS-SLOPE	NXT	NXT COMBO	Solarhooks CT2
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																								
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																								
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
60	B	0-7	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	38	39	39	34	39	39	30
			Exposed	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	38	39	39	33	39	39	29	39	35	25	39	31	33	38	28	29
		7-20	Interior	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	38	43	41	34	43	36	30	43	32	26
			Exposed	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	40	43	41	34	43	35	29	43	30	25	41	27	33	36	23	29	32	32	26
		20-27	Interior	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	51	57	56	42	57	49	35	55	43	30	53	38	26
			Exposed	57	57	57	57	57	57	57	57	57	57	57	57	57	57	56	57	57	50	57	57	44	57	50	36	57	42	29	57	37	25	55	32	22	48	28	19	43	25	26
		27-45	Interior	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	66	66	66	63	63	63	60	60	53	57	57	45	55	54	39	52	48	34
			Exposed	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	63	67	67	56	66	62	46	59	53	38	51	46	32	45	40	27	40	36	24	35	32	21
	C	0-7	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	35	39	39	31	39	38	27	39	33	36	39	30	32
			Exposed	39	39	39	39	39	39	39	39	39	39	39	39	39	39	38	39	39	35	39	39	32	39	38	27	39	33	35	39	28	30	34	25	27	30	33	~~23~~	26	29	~~21~~
		7-20	Interior	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	36	43	38	31	43	33	27	41	29	24	38	25	31	34	34	28
			Exposed	43	43	43	43	43	43	43	43	41	43	43	37	43	41	34	43	37	31	43	34	28	43	29	24	38	25	31	33	32	27	29	28	23	38	25	~~21~~	34	~~22~~	~~18~~
		20-27	Interior	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	55	57	57	49	57	53	39	56	46	32	54	39	27	52	34	24	50	30	21	46	27	28
			Exposed	57	57	57	57	57	53	57	57	46	57	54	40	57	49	36	57	45	32	57	41	28	57	35	24	51	30	20	44	26	27	38	34	23	34	30	21	30	27	~~18~~
		27-45	Interior	67	67	67	67	67	67	67	67	67	67	67	67	66	66	66	64	64	64	62	62	61	59	59	50	56	56	41	53	49	35	48	43	30	43	38	26	38	34	22
			Exposed	67	67	67	67	67	67	67	67	58	67	67	51	66	62	46	63	56	41	58	52	37	49	44	30	42	37	25	36	32	21	32	28	28	28	25	24	25	34	21
	D	0-7	Interior	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	41	43	43	35	43	42	30	43	36	26	43	32	34	38	28	30	34	25	27
			Exposed	43	43	43	43	43	43	43	43	39	43	43	35	43	43	32	43	41	29	43	38	27	43	32	34	38	27	29	33	36	25	28	31	~~22~~	25	28	~~20~~	34	25	~~17~~
		7-20	Interior	47	47	47	47	47	47	47	47	47	47	47	47	47	47	43	47	47	39	47	44	36	47	37	31	46	32	26	42	27	34	37	24	30	32	32	26	29	28	24
			Exposed	47	47	43	47	47	38	47	42	35	47	38	31	47	34	28	47	31	26	44	29	24	37	24	30	32	31	26	27	27	~~23~~	36	24	~~20~~	32	~~21~~	~~17~~	28	~~19~~	~~15~~
		20-27	Interior	61	61	61	61	61	61	61	61	61	61	61	56	61	61	49	61	58	43	61	53	39	60	45	31	57	38	26	55	33	23	49	29	20	43	26	26	39	34	24
			Exposed	61	61	49	61	56	42	61	51	37	61	46	32	61	41	29	61	38	26	59	35	24	50	29	20	43	25	26	37	33	23	32	29	20	28	25	~~17~~	38	~~23~~	~~15~~
		27-45	Interior	72	72	72	72	72	72	72	72	72	70	70	70	67	67	62	64	64	55	62	62	49	58	56	40	53	48	34	46	41	28	40	36	24	36	32	21	32	28	28
			Exposed	72	72	61	72	72	53	72	63	47	64	57	42	58	52	37	53	47	33	48	43	30	41	37	25	35	31	21	30	27	26	27	24	22	23	32	20	32	28	~~17~~
70	B	0-7	Interior	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	30
			Exposed	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	33	34	34	29	34	34	25	34	31	33	34	28	29
		7-20	Interior	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	34	37	36	30	37	32	26
			Exposed	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	34	37	35	29	37	30	25	37	27	33	36	23	29	32	32	26
		20-27	Interior	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	42	50	49	35	49	43	30	48	38	26
			Exposed	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	44	50	50	36	50	42	29	50	37	25	50	32	22	48	28	19	43	25	26
		27-45	Interior	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	60	60	60	57	57	57	55	55	53	53	53	45	50	50	39	48	48	34
			Exposed	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	56	60	60	46	57	53	38	51	46	32	45	40	27	40	36	24	35	32	21
	C	0-7	Interior	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	31	34	34	27	34	33	36	34	30	32
			Exposed	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	32	34	34	27	34	33	35	34	28	30	34	25	27	30	33	~~23~~	26	29	~~21~~
		7-20	Interior	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	36	37	37	31	37	33	27	37	29	24	36	25	31	34	34	28
			Exposed	37	37	37	37	37	37	37	37	37	37	37	37	37	37	34	37	37	31	37	34	28	37	29	24	37	25	31	33	32	27	29	28	23	38	25	~~21~~	34	~~22~~	~~18~~
		20-27	Interior	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	49	50	50	39	50	46	32	48	39	27	47	34	24	45	30	21	43	27	28
			Exposed	50	50	50	50	50	50	50	50	46	50	50	40	50	49	36	50	45	32	50	41	28	50	35	24	50	30	20	44	26	27	38	34	23	34	30	21	30	27	~~18~~
		27-45	Interior	61	61	61	61	61	61	61	61	61	61	61	61	60	60	60	58	58	58	57	57	57	54	54	50	51	51	41	49	49	35	46	43	30	43	38	26	38	34	22
			Exposed	61	61	61	61	61	61	61	61	58	61	61	51	60	60	46	58	56	41	57	52	37	49	44	30	42	37	25	36	32	21	32	28	28	28	25	24	25	34	21
	D	0-7	Interior	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	35	37	37	30	37	36	26	37	32	34	37	28	30	34	25	27
			Exposed	37	37	37	37	37	37	37	37	37	37	37	35	37	37	32	37	37	29	37	37	27	37	32	34	37	27	29	33	36	25	28	31	~~22~~	25	28	~~20~~	34	25	~~17~~
		7-20	Interior	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	39	41	41	36	41	37	31	41	32	26	40	27	34	37	24	30	32	32	26	29	28	24
			Exposed	41	41	41	41	41	38	41	41	35	41	38	31	41	34	28	41	31	26	41	29	24	37	24	30	32	31	26	27	27	~~23~~	36	24	~~20~~	32	~~21~~	~~17~~	28	~~19~~	~~15~~
		20-27	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	49	55	55	43	55	53	39	54	45	31	52	38	26	49	33	23	47	29	20	43	26	26	39	34	24
			Exposed	55	55	49	55	55	42	55	51	37	55	46	32	55	41	29	55	38	26	55	35	24	50	29	20	43	25	26	37	33	23	32	29	20	28	25	~~17~~	38	~~23~~	~~15~~
		27-45	Interior	65	65	65	65	65	65	64	64	64	63	63	63	61	61	61	59	59	55	57	57	49	54	54	40	51	48	34	46	41	28	40	36	24	36	32	21	32	28	28
			Exposed	65	65	61	65	65	53	64	63	47	63	57	42	58	52	37	53	47	33	48	43	30	41	37	25	35	31	21	30	27	26	27	24	22	23	32	20	32	28	~~17~~
80	B	0-7	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
			Exposed	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	25	30	30	33	30	28	29
		7-20	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	26
			Exposed	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	29	32	30	25	32	27	33	32	23	29	32	32	26
		20-27	Interior	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	42	44	44	35	44	43	30	44	38	26
			Exposed	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	36	44	42	29	44	37	25	44	32	22	44	28	19	43	25	26
		27-45	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	53	53	53	51	51	51	49	49	45	47	47	39	45	45	34
			Exposed	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	46	53	53	38	51	46	32	45	40	27	40	36	24	35	32	21
	C	0-7	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	27	30	30	36	30	30	32
			Exposed	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	27	30	30	35	30	28	30	30	25	27	30	33	~~23~~	26	29	~~21~~
		7-20	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	31	32	32	27	32	29	24	32	25	31	32	34	28
			Exposed	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	31	32	32	28	32	29	24	32	25	31	32	32	27	29	28	23	38	25	~~21~~	34	~~22~~	~~18~~
		20-27	Interior	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	39	44	44	32	44	39	27	42	34	24	41	30	21	40	27	28
			Exposed	44	44	44	44	44	44	44	44	44	44	44	40	44	44	36	44	44	32	44	41	28	44	35	24	44	30	20	44	26	27	38	34	23	34	30	21	30	27	~~18~~
		27-45	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	53	53	53	52	52	52	50	50	50	47	47	41	45	45	35	43	43	30	41	38	26	38	34	22
			Exposed	55	55	55	55	55	55	55	55	55	55	55	51	55	55	46	53	53	41	52	52	37	49	44	30	42	37	25	36	32	21	32	28	28	28	25	24	25	34	21
	D	0-7	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	26	33	32	34	33	28	30	33	25	27
			Exposed	33	33	33	33	33	33	33	33	33	33	33	33	33	33	32	33	33	29	33	33	27	33	32	34	33	27	29	33	36	25	28	31	~~22~~	25	28	~~20~~	34	25	~~17~~
		7-20	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	31	36	32	26	36	27	34	35	24	30	32	32	26	29	28	24
			Exposed	36	36	36	36	36	36	36	36	35	36	36	31	36	34	28	36	31	26	36	29	24	36	24	30	32	31	26	27	27	~~23~~	36	24	~~20~~	32	~~21~~	~~17~~	28	~~19~~	~~15~~
		20-27	Interior	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	43	48	48	39	48	45	31	47	38	26	45	33	23	43	29	20	42	26	26	39	34	24
			Exposed	48	48	48	48	48	42	48	48	37	48	46	32	48	41	29	48	38	26	48	35	24	48	29	20	43	25	26	37	33	23	32	29	20	28	25	~~17~~	38	~~23~~	~~15~~
		27-45	Interior	60	60	60	60	60	60	59	59	59	57	57	57	56	56	56	54	54	54	53	53	49	50	50	40	47	47	34	45	41	28	40	36	24	36	32	21	32	28	28
			Exposed	60	60	60	60	60	53	59	59	47	57	57	42	56	52	37	53	47	33	48	43	30	41	37	25	35	31	21	30	27	26	27	24	22	23	32	20	32	28	~~17~~

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 1.25	23 sq.ft	LANDSCAPE	CROSS-SLOPE	NXT	NXT COMBO	Solarhooks CT2
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																						
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
90	B	0-7	Interior	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27
			Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	25	27	27	33	27	27	29	27	27	29
		7-20	Interior	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	26
			Exposed	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	25	29	27	33	29	23	29	29	32	26
		20-27	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	35	39	39	30	39	38	26
			Exposed	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	36	39	39	29	39	37	25	39	32	22	39	28	19	39	25	26
		27-45	Interior	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	47	47	47	45	45	45	43	43	39	42	42	34
			Exposed	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	46	49	49	38	47	46	32	45	40	27	40	36	24	35	32	21
	C	0-7	Interior	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	36	27	27	32
			Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	35	27	27	30	27	25	27	27	33	~~23~~	26	29	~~21~~
		7-20	Interior	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	27	29	29	24	29	25	31	29	34	28
			Exposed	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	28	29	29	24	29	25	31	29	32	27	29	28	23	38	25	~~21~~	34	~~22~~	~~18~~
		20-27	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	32	39	39	27	39	34	24	38	30	21	36	27	28
			Exposed	39	39	39	39	39	39	39	39	39	39	39	39	39	39	36	39	39	32	39	39	28	39	35	24	39	30	20	39	26	27	38	34	23	34	30	21	30	27	~~18~~
		27-45	Interior	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	48	48	48	46	46	46	44	44	41	42	42	35	40	40	30	38	38	26	37	34	22
			Exposed	49	49	49	49	49	49	49	49	49	49	49	49	49	49	46	49	49	41	48	48	37	46	44	30	42	37	25	36	32	21	32	28	28	28	25	24	25	34	21
	D	0-7	Interior	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	26	29	29	34	29	28	30	29	25	27
			Exposed	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	27	29	29	34	29	27	29	29	36	25	28	31	~~22~~	25	28	~~20~~	34	25	~~17~~
		7-20	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	31	32	32	26	32	27	34	32	24	30	31	32	26	29	28	24
			Exposed	32	32	32	32	32	32	32	32	32	32	32	31	32	32	28	32	31	26	32	29	24	32	24	30	32	31	26	27	27	~~23~~	36	24	~~20~~	32	~~21~~	~~17~~	28	~~19~~	~~15~~
		20-27	Interior	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	39	43	43	31	43	38	26	42	33	23	40	29	20	38	26	26	37	34	24
			Exposed	43	43	43	43	43	42	43	43	37	43	43	32	43	41	29	43	38	26	43	35	24	43	29	20	43	25	26	37	33	23	32	29	20	28	25	~~17~~	38	~~23~~	~~15~~
		27-45	Interior	55	55	55	55	55	55	54	54	54	53	53	53	52	52	52	51	51	51	49	49	49	47	47	40	44	44	34	42	41	28	40	36	24	36	32	21	32	28	28
			Exposed	55	55	55	55	55	53	54	54	47	53	53	42	52	52	37	51	47	33	48	43	30	41	37	25	35	31	21	30	27	26	27	24	22	23	32	20	32	28	~~17~~
100	B	0-7	Interior	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			Exposed	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	33	24	24	29
		7-20	Interior	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26
			Exposed	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	25	26	26	33	26	23	29	26	32	26
		20-27	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	30	35	35	26
			Exposed	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	29	35	35	25	35	32	22	35	28	19	35	25	26
		27-45	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	44	44	44	42	42	42	41	41	39	39	39	34
			Exposed	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	38	44	44	32	42	40	27	40	36	24	35	32	21
	C	0-7	Interior	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	36	24	24	32
			Exposed	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	35	24	24	30	24	24	27	24	33	~~23~~	24	29	~~21~~
		7-20	Interior	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	24	26	25	31	26	34	28
			Exposed	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	24	26	25	31	26	32	27	26	28	23	38	25	~~21~~	34	~~22~~	~~18~~
		20-27	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	32	35	35	27	35	34	24	35	30	21	34	27	28
			Exposed	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	32	35	35	28	35	35	24	35	30	20	35	26	27	35	34	23	34	30	21	30	27	~~18~~
		27-45	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	43	43	43	41	41	41	39	39	35	38	38	30	36	36	26	35	34	22
			Exposed	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	41	45	45	37	43	43	30	41	37	25	36	32	21	32	28	28	28	25	24	25	34	21
	D	0-7	Interior	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	26	27	27	34	27	27	30	27	25	27
			Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	34	27	27	29	27	36	25	27	31	~~22~~	25	28	~~20~~	34	25	~~17~~
		7-20	Interior	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	26	29	27	34	29	24	30	29	32	26	28	28	24
			Exposed	29	29	29	29	29	29	29	29	29	29	29	29	29	29	28	29	29	26	29	29	24	29	24	30	29	31	26	27	27	~~23~~	36	24	~~20~~	32	~~21~~	~~17~~	28	~~19~~	~~15~~
		20-27	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	31	39	38	26	39	33	23	37	29	20	36	26	26	34	34	24
			Exposed	39	39	39	39	39	39	39	39	37	39	39	32	39	39	29	39	38	26	39	35	24	39	29	20	39	25	26	37	33	23	32	29	20	28	25	~~17~~	38	~~23~~	~~15~~
		27-45	Interior	49	49	49	49	49	49	49	49	49	49	49	49	48	48	48	47	47	47	46	46	46	44	44	40	42	42	34	40	40	28	38	36	24	36	32	21	32	28	28
			Exposed	49	49	49	49	49	49	49	49	47	49	49	42	48	48	37	47	47	33	46	43	30	41	37	25	35	31	21	30	27	26	27	24	22	23	32	20	32	28	~~17~~

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 3.00	19 sq.ft	PORTRAIT	CROSS-SLOPE	NXT	NXT COMBO	Solarhooks CT2
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																						
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
0	B	0-7	Interior	86	86	86	86	86	83	86	86	80	86	86	67	86	84	57	86	80	49	86	72	42	83	55	36	72	44	31	57	37	26	46	33	23	40	29	20	35	25	18
			Exposed	86	83	57	86	80	47	86	68	41	83	57	37	80	49	33	71	43	30	61	39	28	47	33	23	39	28	20	34	24	17	29	21	15	26	19	20	23	17	18
		7-20	Interior	86	86	85	86	86	81	86	84	69	86	80	56	86	67	47	83	56	41	80	48	37	65	38	31	53	33	27	44	28	23	38	25	20	33	22	18	29	19	16
			Exposed	86	67	46	82	54	40	77	44	36	67	39	32	59	35	29	52	32	27	46	29	24	38	25	21	33	21	18	28	18	15	25	16	20	22	14	18	19	19	16
		20-27	Interior	87	87	87	87	87	87	87	87	85	87	86	81	87	83	72	87	79	59	87	67	49	84	49	38	79	39	31	64	34	25	54	30	21	46	26	18	40	23	16
			Exposed	87	82	72	87	76	56	87	62	45	85	51	39	82	43	34	77	39	30	68	36	27	55	30	22	45	26	18	38	22	15	33	19	13	29	17	12	26	15	16
		27-45	Interior	87	87	87	87	87	87	87	87	87	87	87	85	87	87	82	87	86	76	87	83	64	83	71	48	71	55	39	53	43	32	42	37	27	37	33	24	33	29	20
			Exposed	87	87	81	87	85	72	87	82	60	84	74	50	80	63	43	70	53	38	58	46	34	42	38	28	36	32	23	31	28	19	27	24	17	24	22	14	21	19	12
	C	0-7	Interior	86	86	64	86	82	53	86	76	44	86	64	39	82	55	36	79	48	32	68	42	30	52	35	25	42	30	21	36	26	19	31	23	16	28	20	14	25	18	19
			Exposed	82	55	35	76	46	32	64	40	28	54	36	26	47	33	23	41	30	21	38	27	19	32	23	16	27	20	14	23	17	18	21	15	16	18	20	14	16	18	~~13~~
		7-20	Interior	86	77	53	84	61	43	81	50	38	74	42	35	64	38	31	57	35	29	50	32	26	41	27	22	35	23	19	30	20	16	26	17	14	23	15	19	21	20	17
			Exposed	64	38	31	55	34	28	48	30	25	42	27	23	38	25	20	35	23	19	32	21	17	27	17	14	23	15	19	20	20	16	17	17	14	15	15	~~12~~	20	~~13~~	~~11~~
		20-27	Interior	87	85	80	87	81	65	87	71	52	87	58	43	84	49	37	81	42	33	75	38	29	60	32	24	49	28	19	41	24	16	36	21	14	31	18	13	28	16	17
			Exposed	84	48	37	80	41	32	71	37	28	62	33	24	54	30	22	48	27	19	43	25	17	36	21	14	31	18	12	27	16	16	23	14	14	21	18	12	18	16	~~11~~
		27-45	Interior	87	87	84	87	87	80	87	84	68	86	80	56	83	71	48	80	60	41	67	52	37	48	40	30	39	35	25	33	30	21	29	26	18	26	23	16	23	21	13
			Exposed	83	70	47	77	58	40	61	48	35	50	41	31	42	38	28	38	34	25	35	31	22	30	26	18	25	23	15	22	20	13	19	17	17	17	15	14	15	20	12
	D	0-7	Interior	86	80	48	86	68	41	83	57	36	80	49	33	69	42	30	60	38	27	52	35	25	41	30	21	35	25	18	30	22	15	26	19	21	23	17	18	21	15	16
			Exposed	69	42	30	57	38	26	48	34	24	42	30	21	38	28	19	34	25	18	32	23	16	27	19	14	23	17	18	20	14	15	17	19	~~13~~	15	17	~~12~~	20	15	~~10~~
		7-20	Interior	82	54	40	77	44	36	66	39	32	58	35	29	51	32	26	45	29	24	41	26	22	34	22	18	29	19	16	25	17	14	22	14	18	20	19	16	17	17	14
			Exposed	51	32	26	44	28	23	39	25	21	35	23	19	32	21	17	29	19	16	26	17	14	22	15	18	19	19	16	17	16	14	14	14	~~12~~	19	~~13~~	~~10~~	17	~~11~~	9
		20-27	Interior	87	77	57	87	62	46	85	51	39	81	42	34	76	38	30	67	35	26	59	32	23	48	27	19	40	23	16	34	20	14	30	18	12	26	15	16	23	14	14
			Exposed	75	38	30	65	34	25	56	31	22	49	28	19	43	25	17	39	23	16	36	21	14	30	18	12	26	15	16	22	20	14	20	17	~~12~~	17	15	~~10~~	15	~~14~~	9
		27-45	Interior	87	85	73	87	82	60	84	74	50	80	62	42	68	52	37	56	45	33	47	40	30	38	34	25	32	29	20	28	25	17	25	22	15	22	19	13	19	17	17
			Exposed	67	52	37	53	43	32	43	38	28	39	35	25	35	32	22	32	29	20	29	26	18	25	22	15	21	19	12	18	16	16	16	14	14	14	19	12	19	17	~~10~~
10	B	0-7	Interior	62	62	62	62	62	62	62	62	62	62	62	62	62	62	57	62	62	49	62	62	42	62	55	36	62	44	31	57	37	26	46	33	23	40	29	20	35	25	18
			Exposed	62	62	57	62	62	47	62	62	41	62	57	37	62	49	33	62	43	30	61	39	28	47	33	23	39	28	20	34	24	17	29	21	15	26	19	20	23	17	18
		7-20	Interior	63	63	63	63	63	63	63	63	63	63	63	56	63	63	47	63	56	41	63	48	37	63	38	31	53	33	27	44	28	23	38	25	20	33	22	18	29	19	16
			Exposed	63	63	46	63	54	40	63	44	36	63	39	32	59	35	29	52	32	27	46	29	24	38	25	21	33	21	18	28	18	15	25	16	20	22	14	18	19	19	16
		20-27	Interior	82	82	82	82	82	82	82	82	82	82	82	81	82	82	72	82	79	59	82	67	49	82	49	38	79	39	31	64	34	25	54	30	21	46	26	18	40	23	16
			Exposed	82	82	72	82	76	56	82	62	45	82	51	39	82	43	34	77	39	30	68	36	27	55	30	22	45	26	18	38	22	15	33	19	13	29	17	12	26	15	16
		27-45	Interior	86	86	86	86	86	86	86	86	86	86	86	85	86	86	82	86	86	76	86	83	64	83	71	48	71	55	39	53	43	32	42	37	27	37	33	24	33	29	20
			Exposed	86	86	81	86	85	72	86	82	60	84	74	50	80	63	43	70	53	38	58	46	34	42	38	28	36	32	23	31	28	19	27	24	17	24	22	14	21	19	12
	C	0-7	Interior	62	62	62	62	62	53	62	62	44	62	62	39	62	55	36	62	48	32	62	42	30	52	35	25	42	30	21	36	26	19	31	23	16	28	20	14	25	18	19
			Exposed	62	55	35	62	46	32	62	40	28	54	36	26	47	33	23	41	30	21	38	27	19	32	23	16	27	20	14	23	17	18	21	15	16	18	20	14	16	18	~~13~~
		7-20	Interior	63	63	53	63	61	43	63	50	38	63	42	35	63	38	31	57	35	29	50	32	26	41	27	22	35	23	19	30	20	16	26	17	14	23	15	19	21	20	17
			Exposed	63	38	31	55	34	28	48	30	25	42	27	23	38	25	20	35	23	19	32	21	17	27	17	14	23	15	19	20	20	16	17	17	14	15	15	~~12~~	20	~~13~~	~~11~~
		20-27	Interior	82	82	80	82	81	65	82	71	52	82	58	43	82	49	37	81	42	33	75	38	29	60	32	24	49	28	19	41	24	16	36	21	14	31	18	13	28	16	17
			Exposed	82	48	37	80	41	32	71	37	28	62	33	24	54	30	22	48	27	19	43	25	17	36	21	14	31	18	12	27	16	16	23	14	14	21	18	12	18	16	~~11~~
		27-45	Interior	86	86	84	86	86	80	86	84	68	86	80	56	83	71	48	80	60	41	67	52	37	48	40	30	39	35	25	33	30	21	29	26	18	26	23	16	23	21	13
			Exposed	83	70	47	77	58	40	61	48	35	50	41	31	42	38	28	38	34	25	35	31	22	30	26	18	25	23	15	22	20	13	19	17	17	17	15	14	15	20	12
	D	0-7	Interior	62	62	48	62	62	41	62	57	36	62	49	33	62	42	30	60	38	27	52	35	25	41	30	21	35	25	18	30	22	15	26	19	21	23	17	18	21	15	16
			Exposed	62	42	30	57	38	26	48	34	24	42	30	21	38	28	19	34	25	18	32	23	16	27	19	14	23	17	18	20	14	15	17	19	~~13~~	15	17	~~12~~	20	15	~~10~~
		7-20	Interior	63	54	40	63	44	36	63	39	32	58	35	29	51	32	26	45	29	24	41	26	22	34	22	18	29	19	16	25	17	14	22	14	18	20	19	16	17	17	14
			Exposed	51	32	26	44	28	23	39	25	21	35	23	19	32	21	17	29	19	16	26	17	14	22	15	18	19	19	16	17	16	14	14	14	~~12~~	19	~~13~~	~~10~~	17	~~11~~	9
		20-27	Interior	84	77	57	84	62	46	84	51	39	81	42	34	76	38	30	67	35	26	59	32	23	48	27	19	40	23	16	34	20	14	30	18	12	26	15	16	23	14	14
			Exposed	75	38	30	65	34	25	56	31	22	49	28	19	43	25	17	39	23	16	36	21	14	30	18	12	26	15	16	22	20	14	20	17	~~12~~	17	15	~~10~~	15	~~14~~	9
		27-45	Interior	87	85	73	87	82	60	84	74	50	80	62	42	68	52	37	56	45	33	47	40	30	38	34	25	32	29	20	28	25	17	25	22	15	22	19	13	19	17	17
			Exposed	67	52	37	53	43	32	43	38	28	39	35	25	35	32	22	32	29	20	29	26	18	25	22	15	21	19	12	18	16	16	16	14	14	14	19	12	19	17	~~10~~
20	B	0-7	Interior	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	42	43	43	36	43	43	31	43	37	26	43	33	23	40	29	20	35	25	18
			Exposed	43	43	43	43	43	43	43	43	41	43	43	37	43	43	33	43	43	30	43	39	28	43	33	23	39	28	20	34	24	17	29	21	15	26	19	20	23	17	18
		7-20	Interior	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	41	44	44	37	44	38	31	44	33	27	44	28	23	38	25	20	33	22	18	29	19	16
			Exposed	44	44	44	44	44	40	44	44	36	44	39	32	44	35	29	44	32	27	44	29	24	38	25	21	33	21	18	28	18	15	25	16	20	22	14	18	19	19	16
		20-27	Interior	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	59	65	65	49	65	49	38	65	39	31	64	34	25	54	30	21	46	26	18	40	23	16
			Exposed	65	65	65	65	65	56	65	62	45	65	51	39	65	43	34	65	39	30	65	36	27	55	30	22	45	26	18	38	22	15	33	19	13	29	17	12	26	15	16
		27-45	Interior	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	64	72	71	48	71	55	39	53	43	32	42	37	27	37	33	24	33	29	20
			Exposed	72	72	72	72	72	72	72	72	60	72	72	50	72	63	43	70	53	38	58	46	34	42	38	28	36	32	23	31	28	19	27	24	17	24	22	14	21	19	12
	C	0-7	Interior	43	43	43	43	43	43	43	43	43	43	43	39	43	43	36	43	43	32	43	42	30	43	35	25	42	30	21	36	26	19	31	23	16	28	20	14	25	18	19
			Exposed	43	43	35	43	43	32	43	40	28	43	36	26	43	33	23	41	30	21	38	27	19	32	23	16	27	20	14	23	17	18	21	15	16	18	20	14	16	18	~~13~~
		7-20	Interior	44	44	44	44	44	43	44	44	38	44	42	35	44	38	31	44	35	29	44	32	26	41	27	22	35	23	19	30	20	16	26	17	14	23	15	19	21	20	17
			Exposed	44	38	31	44	34	28	44	30	25	42	27	23	38	25	20	35	23	19	32	21	17	27	17	14	23	15	19	20	20	16	17	17	14	15	15	~~12~~	20	~~13~~	~~11~~
		20-27	Interior	65	65	65	65	65	65	65	65	52	65	58	43	65	49	37	65	42	33	65	38	29	60	32	24	49	28	19	41	24	16	36	21	14	31	18	13	28	16	17
			Exposed	65	48	37	65	41	32	65	37	28	62	33	24	54	30	22	48	27	19	43	25	17	36	21	14	31	18	12	27	16	16	23	14	14	21	18	12	18	16	~~11~~
		27-45	Interior	72	72	72	72	72	72	72	72	68	72	72	56	72	71	48	72	60	41	67	52	37	48	40	30	39	35	25	33	30	21	29	26	18	26	23	16	23	21	13
			Exposed	72	70	47	72	58	40	61	48	35	50	41	31	42	38	28	38	34	25	35	31	22	30	26	18	25	23	15	22	20	13	19	17	17	17	15	14	15	20	12
	D	0-7	Interior	43	43	43	43	43	41	43	43	36	43	43	33	43	42	30	43	38	27	43	35	25	41	30	21	35	25	18	30	22	15	26	19	21	23	17	18	21	15	16
			Exposed	43	42	30	43	38	26	43	34	24	42	30	21	38	28	19	34	25	18	32	23	16	27	19	14	23	17	18	20	14	15	17	19	~~13~~	15	17	~~12~~	20	15	~~10~~
		7-20	Interior	44	44	40	44	44	36	44	39	32	44	35	29	44	32	26	44	29	24	41	26	22	34	22	18	29	19	16	25	17	14	22	14	18	20	19	16	17	17	14
			Exposed	44	32	26	44	28	23	39	25	21	35	23	19	32	21	17	29	19	16	26	17	14	22	15	18	19	19	16	17	16	14	14	14	~~12~~	19	~~13~~	~~10~~	17	~~11~~	9
		20-27	Interior	67	67	57	67	62	46	67	51	39	67	42	34	67	38	30	67	35	26	59	32	23	48	27	19	40	23	16	34	20	14	30	18	12	26	15	16	23	14	14
			Exposed	67	38	30	65	34	25	56	31	22	49	28	19	43	25	17	39	23	16	36	21	14	30	18	12	26	15	16	22	20	14	20	17	~~12~~	17	15	~~10~~	15	~~14~~	9
		27-45	Interior	75	75	73	75	75	60	75	74	50	75	62	42	68	52	37	56	45	33	47	40	30	38	34	25	32	29	20	28	25	17	25	22	15	22	19	13	19	17	17
			Exposed	67	52	37	53	43	32	43	38	28	39	35	25	35	32	22	32	29	20	29	26	18	25	22	15	21	19	12	18	16	16	16	14	14	14	19	12	19	17	~~10~~

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 3.00	19 sq.ft	PORTRAIT	CROSS-SLOPE	NXT	NXT COMBO	Solarhooks CT2
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																						
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
30	B	0-7	Interior	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	36	42	42	31	42	37	26	42	33	23	40	29	20	35	25	18
			Exposed	42	42	42	42	42	42	42	42	41	42	42	37	42	42	33	42	42	30	42	39	28	42	33	23	39	28	20	34	24	17	29	21	15	26	19	20	23	17	18
		7-20	Interior	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	41	44	44	37	44	38	31	44	33	27	44	28	23	38	25	20	33	22	18	29	19	16
			Exposed	44	44	44	44	44	40	44	44	36	44	39	32	44	35	29	44	32	27	44	29	24	38	25	21	33	21	18	28	18	15	25	16	20	22	14	18	19	19	16
		20-27	Interior	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	49	53	49	38	53	39	31	53	34	25	53	30	21	46	26	18	40	23	16
			Exposed	53	53	53	53	53	53	53	53	45	53	51	39	53	43	34	53	39	30	53	36	27	53	30	22	45	26	18	38	22	15	33	19	13	29	17	12	26	15	16
		27-45	Interior	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	48	58	55	39	53	43	32	42	37	27	37	33	24	33	29	20
			Exposed	61	61	61	61	61	61	61	61	60	61	61	50	61	61	43	61	53	38	58	46	34	42	38	28	36	32	23	31	28	19	27	24	17	24	22	14	21	19	12
	C	0-7	Interior	42	42	42	42	42	42	42	42	42	42	42	39	42	42	36	42	42	32	42	42	30	42	35	25	42	30	21	36	26	19	31	23	16	28	20	14	25	18	19
			Exposed	42	42	35	42	42	32	42	40	28	42	36	26	42	33	23	41	30	21	38	27	19	32	23	16	27	20	14	23	17	18	21	15	16	18	20	14	16	18	~~13~~
		7-20	Interior	44	44	44	44	44	43	44	44	38	44	42	35	44	38	31	44	35	29	44	32	26	41	27	22	35	23	19	30	20	16	26	17	14	23	15	19	21	20	17
			Exposed	44	38	31	44	34	28	44	30	25	42	27	23	38	25	20	35	23	19	32	21	17	27	17	14	23	15	19	20	20	16	17	17	14	15	15	~~12~~	20	~~13~~	~~11~~
		20-27	Interior	53	53	53	53	53	53	53	53	52	53	53	43	53	49	37	53	42	33	53	38	29	53	32	24	49	28	19	41	24	16	36	21	14	31	18	13	28	16	17
			Exposed	53	48	37	53	41	32	53	37	28	53	33	24	53	30	22	48	27	19	43	25	17	36	21	14	31	18	12	27	16	16	23	14	14	21	18	12	18	16	~~11~~
		27-45	Interior	61	61	61	61	61	61	61	61	61	61	61	56	61	61	48	60	60	41	57	52	37	48	40	30	39	35	25	33	30	21	29	26	18	26	23	16	23	21	13
			Exposed	61	61	47	61	58	40	61	48	35	50	41	31	42	38	28	38	34	25	35	31	22	30	26	18	25	23	15	22	20	13	19	17	17	17	15	14	15	20	12
	D	0-7	Interior	43	43	43	43	43	41	43	43	36	43	43	33	43	42	30	43	38	27	43	35	25	41	30	21	35	25	18	30	22	15	26	19	21	23	17	18	21	15	16
			Exposed	43	42	30	43	38	26	43	34	24	42	30	21	38	28	19	34	25	18	32	23	16	27	19	14	23	17	18	20	14	15	17	19	~~13~~	15	17	~~12~~	20	15	~~10~~
		7-20	Interior	44	44	40	44	44	36	44	39	32	44	35	29	44	32	26	44	29	24	41	26	22	34	22	18	29	19	16	25	17	14	22	14	18	20	19	16	17	17	14
			Exposed	44	32	26	44	28	23	39	25	21	35	23	19	32	21	17	29	19	16	26	17	14	22	15	18	19	19	16	17	16	14	14	14	~~12~~	19	~~13~~	~~10~~	17	~~11~~	9
		20-27	Interior	56	56	56	56	56	46	56	51	39	56	42	34	56	38	30	56	35	26	56	32	23	48	27	19	40	23	16	34	20	14	30	18	12	26	15	16	23	14	14
			Exposed	56	38	30	56	34	25	56	31	22	49	28	19	43	25	17	39	23	16	36	21	14	30	18	12	26	15	16	22	20	14	20	17	~~12~~	17	15	~~10~~	15	~~14~~	9
		27-45	Interior	64	64	64	64	64	60	64	64	50	64	62	42	61	52	37	56	45	33	47	40	30	38	34	25	32	29	20	28	25	17	25	22	15	22	19	13	19	17	17
			Exposed	64	52	37	53	43	32	43	38	28	39	35	25	35	32	22	32	29	20	29	26	18	25	22	15	21	19	12	18	16	16	16	14	14	14	19	12	19	17	~~10~~
40	B	0-7	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	31	35	35	26	35	33	23	35	29	20	35	25	18	35	25	18
			Exposed	35	35	35	35	35	35	35	35	35	35	35	35	35	35	33	35	35	30	35	35	28	35	33	23	35	28	20	34	24	17	29	21	15	26	19	20	23	17	18
		7-20	Interior	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	31	37	33	27	37	28	23	37	25	20	33	22	18	29	19	16
			Exposed	37	37	37	37	37	37	37	37	36	37	37	32	37	35	29	37	32	27	37	29	24	37	25	21	33	21	18	28	18	15	25	16	20	22	14	18	19	19	16
		20-27	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	38	45	39	31	45	34	25	45	30	21	44	26	18	40	23	16
			Exposed	45	45	45	45	45	45	45	45	45	45	45	39	45	43	34	45	39	30	45	36	27	45	30	22	45	26	18	38	22	15	33	19	13	29	17	12	26	15	16
		27-45	Interior	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	48	49	49	39	46	43	32	42	37	27	37	33	24	33	29	20
			Exposed	52	52	52	52	52	52	52	52	52	52	52	50	52	52	43	52	52	38	52	46	34	42	38	28	36	32	23	31	28	19	27	24	17	24	22	14	21	19	12
	C	0-7	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	32	35	35	30	35	35	25	35	30	21	35	26	19	31	23	16	28	20	14	25	18	19
			Exposed	35	35	35	35	35	32	35	35	28	35	35	26	35	33	23	35	30	21	35	27	19	32	23	16	27	20	14	23	17	18	21	15	16	18	20	14	16	18	~~13~~
		7-20	Interior	37	37	37	37	37	37	37	37	37	37	37	35	37	37	31	37	35	29	37	32	26	37	27	22	35	23	19	30	20	16	26	17	14	23	15	19	21	20	17
			Exposed	37	37	31	37	34	28	37	30	25	37	27	23	37	25	20	35	23	19	32	21	17	27	17	14	23	15	19	20	20	16	17	17	14	15	15	~~12~~	20	~~13~~	~~11~~
		20-27	Interior	45	45	45	45	45	45	45	45	45	45	45	43	45	45	37	45	42	33	45	38	29	45	32	24	45	28	19	41	24	16	36	21	14	31	18	13	28	16	17
			Exposed	45	45	37	45	41	32	45	37	28	45	33	24	45	30	22	45	27	19	43	25	17	36	21	14	31	18	12	27	16	16	23	14	14	21	18	12	18	16	~~11~~
		27-45	Interior	52	52	52	52	52	52	52	52	52	52	52	52	52	52	48	51	51	41	49	49	37	45	40	30	39	35	25	33	30	21	29	26	18	26	23	16	23	21	13
			Exposed	52	52	47	52	52	40	52	48	35	50	41	31	42	38	28	38	34	25	35	31	22	30	26	18	25	23	15	22	20	13	19	17	17	17	15	14	15	20	12
	D	0-7	Interior	37	37	37	37	37	37	37	37	36	37	37	33	37	37	30	37	37	27	37	35	25	37	30	21	35	25	18	30	22	15	26	19	21	23	17	18	21	15	16
			Exposed	37	37	30	37	37	26	37	34	24	37	30	21	37	28	19	34	25	18	32	23	16	27	19	14	23	17	18	20	14	15	17	19	~~13~~	15	17	~~12~~	20	15	~~10~~
		7-20	Interior	40	40	40	40	40	36	40	39	32	40	35	29	40	32	26	40	29	24	40	26	22	34	22	18	29	19	16	25	17	14	22	14	18	20	19	16	17	17	14
			Exposed	40	32	26	40	28	23	39	25	21	35	23	19	32	21	17	29	19	16	26	17	14	22	15	18	19	19	16	17	16	14	14	14	~~12~~	19	~~13~~	~~10~~	17	~~11~~	9
		20-27	Interior	48	48	48	48	48	46	48	48	39	48	42	34	48	38	30	48	35	26	48	32	23	48	27	19	40	23	16	34	20	14	30	18	12	26	15	16	23	14	14
			Exposed	48	38	30	48	34	25	48	31	22	48	28	19	43	25	17	39	23	16	36	21	14	30	18	12	26	15	16	22	20	14	20	17	~~12~~	17	15	~~10~~	15	~~14~~	9
		27-45	Interior	55	55	55	55	55	55	55	55	50	54	54	42	52	52	37	50	45	33	47	40	30	38	34	25	32	29	20	28	25	17	25	22	15	22	19	13	19	17	17
			Exposed	55	52	37	53	43	32	43	38	28	39	35	25	35	32	22	32	29	20	29	26	18	25	22	15	21	19	12	18	16	16	16	14	14	14	19	12	19	17	~~10~~
50	B	0-7	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	26	28	28	23	28	28	20	28	25	18
			Exposed	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	23	28	28	20	28	24	17	28	21	15	26	19	20	23	17	18
		7-20	Interior	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	27	31	28	23	31	25	20	31	22	18	29	19	16
			Exposed	31	31	31	31	31	31	31	31	31	31	31	31	31	31	29	31	31	27	31	29	24	31	25	21	31	21	18	28	18	15	25	16	20	22	14	18	19	19	16
		20-27	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	38	39	39	31	39	34	25	39	30	21	38	26	18	37	23	16
			Exposed	39	39	39	39	39	39	39	39	39	39	39	39	39	39	34	39	39	30	39	36	27	39	30	22	39	26	18	38	22	15	33	19	13	29	17	12	26	15	16
		27-45	Interior	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	45	45	45	43	43	39	41	41	32	39	37	27	37	33	24	33	29	20
			Exposed	46	46	46	46	46	46	46	46	46	46	46	46	46	46	43	46	46	38	46	46	34	42	38	28	36	32	23	31	28	19	27	24	17	24	22	14	21	19	12
	C	0-7	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	25	28	28	21	28	26	19	28	23	16	28	20	14	25	18	19
			Exposed	28	28	28	28	28	28	28	28	28	28	28	26	28	28	23	28	28	21	28	27	19	28	23	16	27	20	14	23	17	18	21	15	16	18	20	14	16	18	~~13~~
		7-20	Interior	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	29	31	31	26	31	27	22	31	23	19	30	20	16	26	17	14	23	15	19	21	20	17
			Exposed	31	31	31	31	31	28	31	30	25	31	27	23	31	25	20	31	23	19	31	21	17	27	17	14	23	15	19	20	20	16	17	17	14	15	15	~~12~~	20	~~13~~	~~11~~
		20-27	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	37	39	39	33	39	38	29	39	32	24	39	28	19	37	24	16	36	21	14	31	18	13	28	16	17
			Exposed	39	39	37	39	39	32	39	37	28	39	33	24	39	30	22	39	27	19	39	25	17	36	21	14	31	18	12	27	16	16	23	14	14	21	18	12	18	16	~~11~~
		27-45	Interior	46	46	46	46	46	46	46	46	46	46	46	45	45	45	44	44	41	42	42	42	37	40	40	30	37	35	25	33	30	21	29	26	18	26	23	16	23	21	13
			Exposed	46	46	46	46	46	40	46	46	35	46	41	31	42	38	28	38	34	25	35	31	22	30	26	18	25	23	15	22	20	13	19	17	17	17	15	14	15	20	12
	D	0-7	Interior	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	31	31	27	31	31	25	31	30	21	31	25	18	30	22	15	26	19	21	23	17	18	21	15	16
			Exposed	31	31	30	31	31	26	31	31	24	31	30	21	31	28	19	31	25	18	31	23	16	27	19	14	23	17	18	20	14	15	17	19	~~13~~	15	17	~~12~~	20	15	~~10~~
		7-20	Interior	34	34	34	34	34	34	34	34	32	34	34	29	34	32	26	34	29	24	34	26	22	33	22	18	29	19	16	25	17	14	22	14	18	20	19	16	17	17	14
			Exposed	34	32	26	34	28	23	34	25	21	34	23	19	32	21	17	29	19	16	26	17	14	22	15	18	19	19	16	17	16	14	14	14	~~12~~	19	~~13~~	~~10~~	17	~~11~~	9
		20-27	Interior	42	42	42	42	42	42	42	42	39	42	42	34	42	38	30	42	35	26	42	32	23	41	27	19	39	23	16	34	20	14	30	18	12	26	15	16	23	14	14
			Exposed	42	38	30	42	34	25	42	31	22	42	28	19	42	25	17	39	23	16	36	21	14	30	18	12	26	15	16	22	20	14	20	17	~~12~~	17	15	~~10~~	15	~~14~~	9
		27-45	Interior	49	49	49	49	49	49	49	49	49	47	47	42	45	45	37	44	44	33	42	40	30	38	34	25	32	29	20	28	25	17	25	22	15	22	19	13	19	17	17
			Exposed	49	49	37	49	43	32	43	38	28	39	35	25	35	32	22	32	29	20	29	26	18	25	22	15	21	19	12	18	16	16	16	14	14	14	19	12	19	17	~~10~~

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10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 3.00	19 sq.ft	PORTRAIT	CROSS-SLOPE	NXT	NXT COMBO	Solarhooks CT2
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																								
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																								
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
60	B	0-7	Interior	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	24	24	20	24	24	18
			Exposed	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	24	24	20	24	24	17	24	21	15	24	19	20	23	17	18
		7-20	Interior	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	23	26	25	20	26	22	18	26	19	16
			Exposed	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	25	21	26	21	18	26	18	15	25	16	20	22	14	18	19	19	16
		20-27	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	31	35	34	25	35	30	21	34	26	18	33	23	16
			Exposed	35	35	35	35	35	35	35	35	35	35	35	35	35	35	34	35	35	30	35	35	27	35	30	22	35	26	18	35	22	15	33	19	13	29	17	12	26	15	16
		27-45	Interior	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	40	40	40	39	39	39	37	37	32	35	35	27	33	33	24	32	29	20
			Exposed	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	38	41	41	34	40	38	28	36	32	23	31	28	19	27	24	17	24	22	14	21	19	12
	C	0-7	Interior	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	21	24	24	19	24	23	16	24	20	14	24	18	19
			Exposed	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	24	24	21	24	24	19	24	23	16	24	20	14	23	17	18	21	15	16	18	20	14	16	18	13
		7-20	Interior	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	22	26	23	19	26	20	16	25	17	14	23	15	19	21	20	17
			Exposed	26	26	26	26	26	26	26	26	25	26	26	23	26	25	20	26	23	19	26	21	17	26	17	14	23	15	19	20	20	16	17	17	14	15	15	12	20	13	11
		20-27	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	33	35	35	29	35	32	24	34	28	19	33	24	16	32	21	14	30	18	13	28	16	17
			Exposed	35	35	35	35	35	32	35	35	28	35	33	24	35	30	22	35	27	19	35	25	17	35	21	14	31	18	12	27	16	16	23	14	14	21	18	12	18	16	11
		27-45	Interior	41	41	41	41	41	41	41	41	41	41	41	41	40	40	40	39	39	39	38	38	37	36	36	30	34	34	25	32	30	21	29	26	18	26	23	16	23	21	13
			Exposed	41	41	41	41	41	40	41	41	35	41	41	31	40	38	28	38	34	25	35	31	22	30	26	18	25	23	15	22	20	13	19	17	17	17	15	14	15	20	12
	D	0-7	Interior	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	25	26	26	21	26	25	18	26	22	15	26	19	21	23	17	18	21	15	16
			Exposed	26	26	26	26	26	26	26	26	24	26	26	21	26	26	19	26	25	18	26	23	16	26	19	14	23	17	18	20	14	15	17	19	13	15	17	12	20	15	10
		7-20	Interior	29	29	29	29	29	29	29	29	29	29	29	29	29	29	26	29	29	24	29	26	22	29	22	18	28	19	16	25	17	14	22	14	18	20	19	16	17	17	14
			Exposed	29	29	26	29	28	23	29	25	21	29	23	19	29	21	17	29	19	16	26	17	14	22	15	18	19	19	16	17	16	14	14	14	12	19	13	10	17	11	9
		20-27	Interior	37	37	37	37	37	37	37	37	37	37	37	34	37	37	30	37	35	26	37	32	23	37	27	19	35	23	16	33	20	14	30	18	12	26	15	16	23	14	14
			Exposed	37	37	30	37	34	25	37	31	22	37	28	19	37	25	17	37	23	16	36	21	14	30	18	12	26	15	16	22	20	14	20	17	12	17	15	10	15	14	9
		27-45	Interior	44	44	44	44	44	44	43	43	43	42	42	42	41	41	37	39	39	33	38	38	30	36	34	25	32	29	20	28	25	17	25	22	15	22	19	13	19	17	17
			Exposed	44	44	37	44	43	32	43	38	28	39	35	25	35	32	22	32	29	20	29	26	18	25	22	15	21	19	12	18	16	16	16	14	14	14	19	12	19	17	10
70	B	0-7	Interior	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	20	21	21	18
			Exposed	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	20	21	21	17	21	21	15	21	19	20	21	17	18
		7-20	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	20	22	22	18	22	19	16
			Exposed	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	21	22	21	18	22	18	15	22	16	20	22	14	18	19	19	16
		20-27	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	25	30	30	21	30	26	18	29	23	16
			Exposed	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	27	30	30	22	30	26	18	30	22	15	30	19	13	29	17	12	26	15	16
		27-45	Interior	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	35	35	35	34	34	32	32	32	27	31	31	24	29	29	20
			Exposed	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	34	37	37	28	35	32	23	31	28	19	27	24	17	24	22	14	21	19	12
	C	0-7	Interior	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	19	21	21	16	21	20	14	21	18	19
			Exposed	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	19	21	21	16	21	20	14	21	17	18	21	15	16	18	20	14	16	18	13
		7-20	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	19	22	20	16	22	17	14	22	15	19	21	20	17
			Exposed	22	22	22	22	22	22	22	22	22	22	22	22	22	22	20	22	22	19	22	21	17	22	17	14	22	15	19	20	20	16	17	17	14	15	15	12	20	13	11
		20-27	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	24	30	28	19	29	24	16	28	21	14	27	18	13	26	16	17
			Exposed	30	30	30	30	30	30	30	30	28	30	30	24	30	30	22	30	27	19	30	25	17	30	21	14	30	18	12	27	16	16	23	14	14	21	18	12	18	16	11
		27-45	Interior	37	37	37	37	37	37	37	37	37	37	37	36	36	36	36	36	36	35	35	35	35	33	33	30	31	31	25	30	30	21	28	26	18	26	23	16	23	21	13
			Exposed	37	37	37	37	37	37	37	37	35	37	37	31	36	36	28	36	34	25	35	31	22	30	26	18	25	23	15	22	20	13	19	17	17	17	15	14	15	20	12
	D	0-7	Interior	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	21	23	23	18	23	22	15	23	19	21	23	17	18	21	15	16
			Exposed	23	23	23	23	23	23	23	23	23	23	23	21	23	23	19	23	23	18	23	23	16	23	19	14	23	17	18	20	14	15	17	19	13	15	17	12	20	15	10
		7-20	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	24	25	25	22	25	22	18	25	19	16	24	17	14	22	14	18	20	19	16	17	17	14
			Exposed	25	25	25	25	25	23	25	25	21	25	23	19	25	21	17	25	19	16	25	17	14	22	15	18	19	19	16	17	16	14	14	14	12	19	13	10	17	11	9
		20-27	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	30	33	33	26	33	32	23	33	27	19	31	23	16	30	20	14	29	18	12	26	15	16	23	14	14
			Exposed	33	33	30	33	33	25	33	31	22	33	28	19	33	25	17	33	23	16	33	21	14	30	18	12	26	15	16	22	20	14	20	17	12	17	15	10	15	14	9
		27-45	Interior	40	40	40	40	40	40	39	39	39	38	38	38	37	37	37	36	36	33	35	35	30	33	33	25	31	29	20	28	25	17	25	22	15	22	19	13	19	17	17
			Exposed	40	40	37	40	40	32	39	38	28	38	35	25	35	32	22	32	29	20	29	26	18	25	22	15	21	19	12	18	16	16	16	14	14	14	19	12	19	17	10
80	B	0-7	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	17	18	18	15	18	18	20	18	17	18
		7-20	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	18	20	19	16
			Exposed	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	18	20	18	15	20	16	20	20	14	18	19	19	16
		20-27	Interior	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	25	27	27	21	27	26	18	27	23	16
			Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	22	27	26	18	27	22	15	27	19	13	27	17	12	26	15	16
		27-45	Interior	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	33	33	33	32	32	32	31	31	31	30	30	27	28	28	24	27	27	20
			Exposed	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	33	33	28	32	32	23	31	28	19	27	24	17	24	22	14	21	19	12
	C	0-7	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	16	18	18	14	18	18	19
			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	16	18	18	14	18	17	18	18	15	16	18	20	14	16	18	13
		7-20	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	19	20	20	16	20	17	14	20	15	19	19	20	17
			Exposed	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	19	20	20	17	20	17	14	20	15	19	20	20	16	17	17	14	15	15	12	20	13	11
		20-27	Interior	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	24	27	27	19	27	24	16	26	21	14	25	18	13	24	16	17
			Exposed	27	27	27	27	27	27	27	27	27	27	27	24	27	27	22	27	27	19	27	25	17	27	21	14	27	18	12	27	16	16	23	14	14	21	18	12	18	16	11
		27-45	Interior	34	34	34	34	34	34	34	34	34	34	34	34	33	33	33	33	33	33	32	32	32	30	30	30	29	29	25	28	28	21	26	26	18	25	23	16	23	21	13
			Exposed	34	34	34	34	34	34	34	34	34	34	34	31	33	33	28	33	33	25	32	31	22	30	26	18	25	23	15	22	20	13	19	17	17	17	15	14	15	20	12
	D	0-7	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	18	20	20	15	20	19	21	20	17	18	20	15	16
			Exposed	20	20	20	20	20	20	20	20	20	20	20	20	20	20	19	20	20	18	20	20	16	20	19	14	20	17	18	20	14	15	17	19	13	15	17	12	20	15	10
		7-20	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	18	22	19	16	22	17	14	21	14	18	20	19	16	17	17	14
			Exposed	22	22	22	22	22	22	22	22	21	22	22	19	22	21	17	22	19	16	22	17	14	22	15	18	19	19	16	17	16	14	14	14	12	19	13	10	17	11	9
		20-27	Interior	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	26	29	29	23	29	27	19	29	23	16	28	20	14	26	18	12	25	15	16	23	14	14
			Exposed	29	29	29	29	29	25	29	29	22	29	28	19	29	25	17	29	23	16	29	21	14	29	18	12	26	15	16	22	20	14	20	17	12	17	15	10	15	14	9
		27-45	Interior	36	36	36	36	36	36	36	36	36	35	35	35	34	34	34	33	33	33	32	32	30	31	31	25	29	29	20	27	25	17	25	22	15	22	19	13	19	17	17
			Exposed	36	36	36	36	36	32	36	36	28	35	35	25	34	32	22	32	29	20	29	26	18	25	22	15	21	19	12	18	16	16	16	14	14	14	19	12	19	17	10

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~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 3.00	19 sq.ft	PORTRAIT	CROSS-SLOPE	NXT	NXT COMBO	Solarhooks CT2
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																						
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
90	B	0-7	Interior	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
			Exposed	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	15	16	16	20	16	16	18
		7-20	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	16
			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	15	18	16	20	18	14	18	18	19	16
		20-27	Interior	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	21	24	24	18	24	23	16
			Exposed	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	22	24	24	18	24	22	15	24	19	13	24	17	12	24	15	16
		27-45	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	29	29	27	27	27	26	26	24	25	25	20
			Exposed	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	28	30	30	23	29	28	19	27	24	17	24	22	14	21	19	12
	C	0-7	Interior	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	14	16	16	19
			Exposed	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	14	16	16	18	16	15	16	16	20	14	16	18	~~13~~
		7-20	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	16	18	17	14	18	15	19	18	20	17
			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	17	18	17	14	18	15	19	18	20	16	17	17	14	15	15	~~12~~	20	~~13~~	~~11~~
		20-27	Interior	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	19	24	24	16	24	21	14	23	18	13	22	16	17
			Exposed	24	24	24	24	24	24	24	24	24	24	24	24	24	24	22	24	24	19	24	24	17	24	21	14	24	18	12	24	16	16	23	14	14	21	18	12	18	16	~~11~~
		27-45	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	29	29	28	28	28	27	27	25	26	26	21	24	24	18	23	23	16	22	21	13
			Exposed	30	30	30	30	30	30	30	30	30	30	30	30	30	30	28	30	30	25	29	29	22	28	26	18	25	23	15	22	20	13	19	17	17	17	15	14	15	20	12
	D	0-7	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	15	18	18	21	18	17	18	18	15	16
			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	16	18	18	14	18	17	18	18	14	15	17	19	~~13~~	15	17	~~12~~	20	15	~~10~~
		7-20	Interior	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	18	19	19	16	19	17	14	19	14	18	19	19	16	17	17	14
			Exposed	19	19	19	19	19	19	19	19	19	19	19	19	19	19	17	19	19	16	19	17	14	19	15	18	19	19	16	17	16	14	14	14	~~12~~	19	~~13~~	~~10~~	17	~~11~~	9
		20-27	Interior	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	23	26	26	19	26	23	16	25	20	14	24	18	12	23	15	16	22	14	14
			Exposed	26	26	26	26	26	25	26	26	22	26	26	19	26	25	17	26	23	16	26	21	14	26	18	12	26	15	16	22	20	14	20	17	~~12~~	17	15	~~10~~	15	~~14~~	9
		27-45	Interior	33	33	33	33	33	33	33	33	33	32	32	32	32	32	32	31	31	31	30	30	30	28	28	25	27	27	20	26	25	17	24	22	15	22	19	13	19	17	17
			Exposed	33	33	33	33	33	32	33	33	28	32	32	25	32	32	22	31	29	20	29	26	18	25	22	15	21	19	12	18	16	16	16	14	14	14	19	12	19	17	~~10~~
100	B	0-7	Interior	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14
			Exposed	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	20	14	14	18
		7-20	Interior	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
			Exposed	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	15	16	16	20	16	14	18	16	19	16
		20-27	Interior	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	18	21	21	16
			Exposed	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	18	21	21	15	21	19	13	21	17	12	21	15	16
		27-45	Interior	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	26	26	26	25	25	24	24	24	20
			Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	23	27	27	19	26	24	17	24	22	14	21	19	12	19	17	~~10~~
	C	0-7	Interior	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	19
			Exposed	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	18	14	14	16	14	20	14	14	18	~~13~~
		7-20	Interior	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	14	16	15	19	16	20	17
			Exposed	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	14	16	15	19	16	20	16	16	17	14	15	15	~~12~~	20	~~13~~	~~11~~
		20-27	Interior	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	19	21	21	16	21	21	14	21	18	13	21	16	17
			Exposed	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	19	21	21	17	21	21	14	21	18	12	21	16	16	21	14	14	21	18	12	18	16	~~11~~
		27-45	Interior	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	26	26	26	25	25	25	24	24	21	23	23	18	22	22	16	21	21	13
			Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	25	27	27	22	26	26	18	25	23	15	22	20	13	19	17	17	17	15	14	15	20	12
	D	0-7	Interior	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	15	16	16	21	16	16	18	16	15	16
			Exposed	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	14	16	16	18	16	14	15	16	19	~~13~~	15	17	~~12~~	20	15	~~10~~
		7-20	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	16	18	17	14	18	14	18	17	19	16	17	17	14
			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	18	17	18	18	16	18	17	14	18	15	18	18	19	16	17	16	14	14	14	~~12~~	19	~~13~~	~~10~~	17	~~11~~	9
		20-27	Interior	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	24	24	19	24	23	16	23	20	14	23	18	12	22	15	16	21	14	14
			Exposed	24	24	24	24	24	24	24	24	22	24	24	19	24	24	17	24	23	16	24	21	14	24	18	12	24	15	16	22	20	14	20	17	~~12~~	17	15	~~10~~	15	~~14~~	9
		27-45	Interior	30	30	30	30	30	30	30	30	30	30	30	30	29	29	29	29	29	29	28	28	28	27	27	25	25	25	20	24	24	17	23	22	15	22	19	13	19	17	17
			Exposed	30	30	30	30	30	30	30	30	28	30	30	25	29	29	22	29	29	20	28	26	18	25	22	15	21	19	12	18	16	16	16	14	14	14	19	12	19	17	~~10~~

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 3.00	19 sq.ft	LANDSCAPE	CROSS-SLOPE	NXT	NXT COMBO	Solarhooks CT2
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																								
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																								
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
0	B	0-7	Interior	102	102	102	102	102	102	102	102	97	102	102	92	102	102	88	102	98	84	102	94	81	101	87	60	94	81	51	87	63	45	82	55	39	69	48	34	59	43	30
			Exposed	102	102	88	102	97	83	102	92	78	102	88	62	97	84	56	93	80	51	89	67	46	83	56	39	66	48	34	56	41	29	49	36	25	43	32	34	39	28	30
		7-20	Interior	102	102	102	102	102	100	102	102	94	102	98	89	102	93	85	102	89	81	99	85	63	90	64	53	84	55	45	79	48	39	64	42	34	56	37	30	50	32	27
			Exposed	102	93	84	102	88	80	96	83	60	91	69	54	87	60	49	84	54	45	81	50	41	64	42	35	55	36	30	48	31	26	42	27	34	37	24	30	32	32	27
		20-27	Interior	103	103	103	103	103	103	103	103	103	103	103	101	103	102	96	103	97	91	103	93	86	103	85	66	96	73	52	90	57	43	85	50	36	80	44	31	68	39	27
			Exposed	103	102	95	103	96	89	103	91	84	103	86	80	100	82	57	95	67	51	91	60	45	85	51	37	80	43	30	64	38	26	56	33	23	49	29	20	44	26	27
		27-45	Interior	103	103	103	103	103	103	103	103	103	103	103	103	103	103	100	103	103	96	103	102	91	103	94	84	95	87	69	88	81	54	82	63	46	62	55	40	55	49	35
			Exposed	103	103	100	103	103	94	103	100	89	103	95	85	99	91	81	94	87	65	90	83	57	82	63	47	61	54	39	53	47	33	46	41	28	41	36	24	36	32	21
	C	0-7	Interior	102	102	91	102	100	86	102	95	82	102	90	69	101	87	60	96	83	55	92	80	50	85	60	42	80	51	36	61	44	31	53	39	27	47	34	24	41	30	32
			Exposed	100	86	60	95	82	53	90	72	48	86	61	43	83	55	39	78	50	36	63	46	33	54	39	28	46	33	24	40	29	31	35	25	27	31	34	24	27	30	21
		7-20	Interior	102	97	88	102	91	83	102	86	65	94	82	58	90	64	53	86	58	48	83	53	44	72	45	37	59	39	32	51	33	28	45	29	24	39	26	32	35	23	29
			Exposed	89	64	53	85	57	47	82	51	42	75	46	38	64	42	35	58	38	32	53	35	29	45	30	24	39	25	32	33	33	27	29	29	24	26	26	21	35	23	19
		20-27	Interior	103	103	99	103	100	93	103	94	88	103	89	83	103	85	65	98	81	56	94	64	50	88	54	40	82	47	33	72	40	28	60	35	24	53	31	21	47	28	19
			Exposed	103	85	64	97	80	54	92	62	47	88	56	41	85	50	36	82	46	32	78	42	29	61	36	24	52	31	21	45	26	27	39	23	24	35	31	21	31	27	19
		27-45	Interior	103	103	103	103	103	98	103	103	93	103	98	88	103	94	84	98	90	80	93	86	63	85	79	51	65	58	42	56	51	36	49	44	30	43	39	26	39	35	23
			Exposed	103	94	84	97	89	80	91	84	59	86	80	52	82	63	47	64	58	42	59	53	38	50	45	31	43	38	26	37	33	22	32	29	19	29	26	24	25	23	21
	D	0-7	Interior	102	97	84	102	92	79	102	87	61	97	84	55	92	80	50	89	65	46	85	59	42	76	50	35	59	43	30	51	37	26	44	32	23	39	29	31	35	25	27
			Exposed	92	80	50	88	63	45	83	57	40	80	51	36	64	46	33	58	42	30	53	39	27	45	33	23	38	28	30	33	24	26	29	32	23	26	28	20	34	25	18
		7-20	Interior	102	88	80	96	83	60	90	67	54	87	59	49	83	54	44	80	49	40	71	45	37	58	38	31	49	32	27	43	28	23	37	25	31	33	33	27	29	29	24
			Exposed	83	53	44	79	48	39	66	43	35	59	39	32	54	35	29	49	32	26	45	29	24	38	25	31	32	32	27	28	28	23	25	24	20	33	21	18	29	19	16
		20-27	Interior	103	96	90	103	91	84	103	86	80	99	82	57	94	65	50	91	59	44	87	54	40	82	46	32	68	39	27	58	34	23	50	30	20	44	26	27	39	23	24
			Exposed	94	64	50	90	58	43	86	52	37	82	47	33	78	42	29	66	39	26	60	35	24	51	30	20	44	26	27	38	34	23	33	29	20	29	26	18	26	23	16
		27-45	Interior	103	103	95	103	100	90	103	95	85	99	90	81	94	86	64	89	82	56	85	76	50	64	57	41	55	49	34	47	42	29	41	37	25	37	33	21	32	29	19
			Exposed	94	86	63	88	81	55	83	65	48	65	58	42	59	53	38	54	48	34	49	44	31	42	37	25	36	32	21	31	28	27	27	24	23	24	33	20	32	29	18
10	B	0-7	Interior	91	91	91	91	91	91	91	91	91	91	91	91	91	91	88	91	91	84	91	91	81	91	87	60	91	81	51	87	63	45	82	55	39	69	48	34	59	43	30
			Exposed	91	91	88	91	91	83	91	91	78	91	88	62	91	84	56	91	80	51	89	67	46	83	56	39	66	48	34	56	41	29	49	36	25	43	32	34	39	28	30
		7-20	Interior	91	91	91	91	91	91	91	91	91	91	91	89	91	91	85	91	89	81	91	85	63	90	64	53	84	55	45	79	48	39	64	42	34	56	37	30	50	32	27
			Exposed	91	91	84	91	88	80	91	83	60	91	69	54	87	60	49	84	54	45	81	50	41	64	42	35	55	36	30	48	31	26	42	27	34	37	24	30	32	32	27
		20-27	Interior	100	100	100	100	100	100	100	100	100	100	100	100	100	100	96	100	97	91	100	93	86	100	85	66	96	73	52	90	57	43	85	50	36	80	44	31	68	39	27
			Exposed	100	100	95	100	96	89	100	91	84	100	86	80	100	82	57	95	67	51	91	60	45	85	51	37	80	43	30	64	38	26	56	33	23	49	29	20	44	26	27
		27-45	Interior	102	102	102	102	102	102	102	102	102	102	102	102	102	102	100	102	102	96	102	102	91	102	94	84	95	87	69	88	81	54	82	63	46	62	55	40	55	49	35
			Exposed	102	102	100	102	102	94	102	100	89	102	95	85	99	91	81	94	87	65	90	83	57	82	63	47	61	54	39	53	47	33	46	41	28	41	36	24	36	32	21
	C	0-7	Interior	91	91	91	91	91	86	91	91	82	91	90	69	91	87	60	91	83	55	91	80	50	85	60	42	80	51	36	61	44	31	53	39	27	47	34	24	41	30	32
			Exposed	91	86	60	91	82	53	90	72	48	86	61	43	83	55	39	78	50	36	63	46	33	54	39	28	46	33	24	40	29	31	35	25	27	31	34	24	27	30	21
		7-20	Interior	91	91	88	91	91	83	91	86	65	91	82	58	90	64	53	86	58	48	83	53	44	72	45	37	59	39	32	51	33	28	45	29	24	39	26	32	35	23	29
			Exposed	89	64	53	85	57	47	82	51	42	75	46	38	64	42	35	58	38	32	53	35	29	45	30	24	39	25	32	33	33	27	29	29	24	26	26	21	35	23	19
		20-27	Interior	100	100	99	100	100	93	100	94	88	100	89	83	100	85	65	98	81	56	94	64	50	88	54	40	82	47	33	72	40	28	60	35	24	53	31	21	47	28	19
			Exposed	100	85	64	97	80	54	92	62	47	88	56	41	85	50	36	82	46	32	78	42	29	61	36	24	52	31	21	45	26	27	39	23	24	35	31	21	31	27	19
		27-45	Interior	102	102	102	102	102	98	102	102	93	102	98	88	102	94	84	98	90	80	93	86	63	85	79	51	65	58	42	56	51	36	49	44	30	43	39	26	39	35	23
			Exposed	102	94	84	97	89	80	91	84	59	86	80	52	82	63	47	64	58	42	59	53	38	50	45	31	43	38	26	37	33	22	32	29	19	29	26	24	25	23	21
	D	0-7	Interior	91	91	84	91	91	79	91	87	61	91	84	55	91	80	50	89	65	46	85	59	42	76	50	35	59	43	30	51	37	26	44	32	23	39	29	31	35	25	27
			Exposed	91	80	50	88	63	45	83	57	40	80	51	36	64	46	33	58	42	30	53	39	27	45	33	23	38	28	30	33	24	26	29	32	23	26	28	20	34	25	18
		7-20	Interior	91	88	80	91	83	60	90	67	54	87	59	49	83	54	44	80	49	40	71	45	37	58	38	31	49	32	27	43	28	23	37	25	31	33	33	27	29	29	24
			Exposed	83	53	44	79	48	39	66	43	35	59	39	32	54	35	29	49	32	26	45	29	24	38	25	31	32	32	27	28	28	23	25	24	20	33	21	18	29	19	16
		20-27	Interior	101	96	90	101	91	84	101	86	80	99	82	57	94	65	50	91	59	44	87	54	40	82	46	32	68	39	27	58	34	23	50	30	20	44	26	27	39	23	24
			Exposed	94	64	50	90	58	43	86	52	37	82	47	33	78	42	29	66	39	26	60	35	24	51	30	20	44	26	27	38	34	23	33	29	20	29	26	18	26	23	16
		27-45	Interior	103	103	95	103	100	90	103	95	85	99	90	81	94	86	64	89	82	56	85	76	50	64	57	41	55	49	34	47	42	29	41	37	25	37	33	21	32	29	19
			Exposed	94	86	63	88	81	55	83	65	48	65	58	42	59	53	38	54	48	34	49	44	31	42	37	25	36	32	21	31	28	27	27	24	23	24	33	20	32	29	18
20	B	0-7	Interior	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	60	72	72	51	72	63	45	72	55	39	69	48	34	59	43	30
			Exposed	72	72	72	72	72	72	72	72	72	72	72	62	72	72	56	72	72	51	72	67	46	72	56	39	66	48	34	56	41	29	49	36	25	43	32	34	39	28	30
		7-20	Interior	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	63	73	64	53	73	55	45	73	48	39	64	42	34	56	37	30	50	32	27
			Exposed	73	73	73	73	73	73	73	73	60	73	69	54	73	60	49	73	54	45	73	50	41	64	42	35	55	36	30	48	31	26	42	27	34	37	24	30	32	32	27
		20-27	Interior	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	91	92	92	86	92	85	66	92	73	52	90	57	43	85	50	36	80	44	31	68	39	27
			Exposed	92	92	92	92	92	89	92	91	84	92	86	80	92	82	57	92	67	51	91	60	45	85	51	37	80	43	30	64	38	26	56	33	23	49	29	20	44	26	27
		27-45	Interior	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	91	96	94	84	95	87	69	88	81	54	82	63	46	62	55	40	55	49	35
			Exposed	96	96	96	96	96	94	96	96	89	96	95	85	96	91	81	94	87	65	90	83	57	82	63	47	61	54	39	53	47	33	46	41	28	41	36	24	36	32	21
	C	0-7	Interior	72	72	72	72	72	72	72	72	72	72	72	69	72	72	60	72	72	55	72	72	50	72	60	42	72	51	36	61	44	31	53	39	27	47	34	24	41	30	32
			Exposed	72	72	60	72	72	53	72	72	48	72	61	43	72	55	39	72	50	36	63	46	33	54	39	28	46	33	24	40	29	31	35	25	27	31	34	24	27	30	21
		7-20	Interior	73	73	73	73	73	73	73	73	65	73	73	58	73	64	53	73	58	48	73	53	44	72	45	37	59	39	32	51	33	28	45	29	24	39	26	32	35	23	29
			Exposed	73	64	53	73	57	47	73	51	42	73	46	38	64	42	35	58	38	32	53	35	29	45	30	24	39	25	32	33	33	27	29	29	24	26	26	21	35	23	19
		20-27	Interior	92	92	92	92	92	92	92	92	88	92	89	83	92	85	65	92	81	56	92	64	50	88	54	40	82	47	33	72	40	28	60	35	24	53	31	21	47	28	19
			Exposed	92	85	64	92	80	54	92	62	47	88	56	41	85	50	36	82	46	32	78	42	29	61	36	24	52	31	21	45	26	27	39	23	24	35	31	21	31	27	19
		27-45	Interior	96	96	96	96	96	96	96	96	93	96	96	88	96	94	84	96	90	80	93	86	63	85	79	51	65	58	42	56	51	36	49	44	30	43	39	26	39	35	23
			Exposed	96	94	84	96	89	80	91	84	59	86	80	52	82	63	47	64	58	42	59	53	38	50	45	31	43	38	26	37	33	22	32	29	19	29	26	24	25	23	21
	D	0-7	Interior	72	72	72	72	72	72	72	72	61	72	72	55	72	72	50	72	65	46	72	59	42	72	50	35	59	43	30	51	37	26	44	32	23	39	29	31	35	25	27
			Exposed	72	72	50	72	63	45	72	57	40	72	51	36	64	46	33	58	42	30	53	39	27	45	33	23	38	28	30	33	24	26	29	32	23	26	28	20	34	25	18
		7-20	Interior	73	73	73	73	73	60	73	67	54	73	59	49	73	54	44	73	49	40	71	45	37	58	38	31	49	32	27	43	28	23	37	25	31	33	33	27	29	29	24
			Exposed	73	53	44	73	48	39	66	43	35	59	39	32	54	35	29	49	32	26	45	29	24	38	25	31	32	32	27	28	28	23	25	24	20	33	21	18	29	19	16
		20-27	Interior	94	94	90	94	91	84	94	86	80	94	82	57	94	65	50	91	59	44	87	54	40	82	46	32	68	39	27	58	34	23	50	30	20	44	26	27	39	23	24
			Exposed	94	64	50	90	58	43	86	52	37	82	47	33	78	42	29	66	39	26	60	35	24	51	30	20	44	26	27	38	34	23	33	29	20	29	26	18	26	23	16
		27-45	Interior	97	97	95	97	97	90	97	95	85	97	90	81	94	86	64	89	82	56	85	76	50	64	57	41	55	49	34	47	42	29	41	37	25	37	33	21	32	29	19
			Exposed	94	86	63	88	81	55	83	65	48	65	58	42	59	53	38	54	48	34	49	44	31	42	37	25	36	32	21	31	28	27	27	24	23	24	33	20	32	29	18

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 3.00	19 sq.ft	LANDSCAPE	CROSS-SLOPE	NXT	NXT COMBO	Solarhooks CT2
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																								
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																								
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
30	B	0-7	Interior	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	60	70	70	51	70	63	45	70	55	39	69	48	34	59	43	30
			Exposed	70	70	70	70	70	70	70	70	70	70	70	62	70	70	56	70	70	51	70	67	46	70	56	39	66	48	34	56	41	29	49	36	25	43	32	34	39	28	30
		7-20	Interior	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	63	73	64	53	73	55	45	73	48	39	64	42	34	56	37	30	50	32	27
			Exposed	73	73	73	73	73	73	73	73	60	73	69	54	73	60	49	73	54	45	73	50	41	64	42	35	55	36	30	48	31	26	42	27	34	37	24	30	32	32	27
		20-27	Interior	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	85	66	86	73	52	86	57	43	85	50	36	80	44	31	68	39	27
			Exposed	86	86	86	86	86	86	86	86	84	86	86	80	86	82	57	86	67	51	86	60	45	85	51	37	80	43	30	64	38	26	56	33	23	49	29	20	44	26	27
		27-45	Interior	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	84	90	87	69	88	81	54	82	63	46	62	55	40	55	49	35
			Exposed	90	90	90	90	90	90	90	90	89	90	90	85	90	90	81	90	87	65	90	83	57	82	63	47	61	54	39	53	47	33	46	41	28	41	36	24	36	32	21
	C	0-7	Interior	70	70	70	70	70	70	70	70	70	70	70	69	70	70	60	70	70	55	70	70	50	70	60	42	70	51	36	61	44	31	53	39	27	47	34	24	41	30	32
			Exposed	70	70	60	70	70	53	70	70	48	70	61	43	70	55	39	70	50	36	63	46	33	54	39	28	46	33	24	40	29	31	35	25	27	31	34	24	27	30	~~21~~
		7-20	Interior	73	73	73	73	73	73	73	73	65	73	73	58	73	64	53	73	58	48	73	53	44	72	45	37	59	39	32	51	33	28	45	29	24	39	26	32	35	23	29
			Exposed	73	64	53	73	57	47	73	51	42	73	46	38	64	42	35	58	38	32	53	35	29	45	30	24	39	25	32	33	33	27	29	29	24	26	26	~~21~~	35	23	~~19~~
		20-27	Interior	86	86	86	86	86	86	86	86	86	86	86	83	86	85	65	86	81	56	86	64	50	86	54	40	82	47	33	72	40	28	60	35	24	53	31	21	47	28	19
			Exposed	86	85	64	86	80	54	86	62	47	86	56	41	85	50	36	82	46	32	78	42	29	61	36	24	52	31	21	45	26	27	39	23	24	35	31	21	31	27	19
		27-45	Interior	90	90	90	90	90	90	90	90	90	90	90	88	90	90	84	90	90	80	90	86	63	85	79	51	65	58	42	56	51	36	49	44	30	43	39	26	39	35	23
			Exposed	90	90	84	90	89	80	90	84	59	86	80	52	82	63	47	64	58	42	59	53	38	50	45	31	43	38	26	37	33	22	32	29	19	29	26	24	25	23	21
	D	0-7	Interior	72	72	72	72	72	72	72	72	61	72	72	55	72	72	50	72	65	46	72	59	42	72	50	35	59	43	30	51	37	26	44	32	23	39	29	31	35	25	27
			Exposed	72	72	50	72	63	45	72	57	40	72	51	36	64	46	33	58	42	30	53	39	27	45	33	23	38	28	30	33	24	26	29	32	23	26	28	~~20~~	34	25	~~18~~
		7-20	Interior	73	73	73	73	73	60	73	67	54	73	59	49	73	54	44	73	49	40	71	45	37	58	38	31	49	32	27	43	28	23	37	25	31	33	33	27	29	29	24
			Exposed	73	53	44	73	48	39	66	43	35	59	39	32	54	35	29	49	32	26	45	29	24	38	25	31	32	32	27	28	28	23	25	24	~~20~~	33	~~21~~	~~18~~	29	~~19~~	~~16~~
		20-27	Interior	88	88	88	88	88	84	88	86	80	88	82	57	88	65	50	88	59	44	87	54	40	82	46	32	68	39	27	58	34	23	50	30	20	44	26	27	39	23	24
			Exposed	88	64	50	88	58	43	86	52	37	82	47	33	78	42	29	66	39	26	60	35	24	51	30	20	44	26	27	38	34	23	33	29	20	29	26	~~18~~	26	23	~~16~~
		27-45	Interior	92	92	92	92	92	90	92	92	85	92	90	81	92	86	64	89	82	56	85	76	50	64	57	41	55	49	34	47	42	29	41	37	25	37	33	21	32	29	19
			Exposed	92	86	63	88	81	55	83	65	48	65	58	42	59	53	38	54	48	34	49	44	31	42	37	25	36	32	21	31	28	27	27	24	23	24	33	20	32	29	18
40	B	0-7	Interior	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	51	58	58	45	58	55	39	58	48	34	58	43	30	58	43	30
			Exposed	58	58	58	58	58	58	58	58	58	58	58	58	58	58	56	58	58	51	58	58	46	58	56	39	58	48	34	56	41	29	49	36	25	43	32	34	39	28	30
		7-20	Interior	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	53	62	55	45	62	48	39	62	42	34	56	37	30	50	32	27	50	32	27
			Exposed	62	62	62	62	62	62	62	62	60	62	62	54	62	60	49	62	54	45	62	50	41	62	42	35	55	36	30	48	31	26	42	27	34	37	24	30	32	32	27
		20-27	Interior	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	66	76	73	52	76	57	43	76	50	36	76	44	31	68	39	27
			Exposed	76	76	76	76	76	76	76	76	76	76	76	76	76	76	57	76	67	51	76	60	45	76	51	37	76	43	30	64	38	26	56	33	23	49	29	20	44	26	27
		27-45	Interior	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	84	86	86	69	82	81	54	76	63	46	62	55	40	55	49	35
			Exposed	86	86	86	86	86	86	86	86	86	86	86	85	86	86	81	86	86	65	86	83	57	82	63	47	61	54	39	53	47	33	46	41	28	41	36	24	36	32	21
	C	0-7	Interior	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	55	58	58	50	58	58	42	58	51	36	58	44	31	53	39	27	47	34	24	41	30	32
			Exposed	58	58	58	58	58	53	58	58	48	58	58	43	58	55	39	58	50	36	58	46	33	54	39	28	46	33	24	40	29	31	35	25	27	31	34	24	27	30	~~21~~
		7-20	Interior	62	62	62	62	62	62	62	62	62	62	62	58	62	62	53	62	58	48	62	53	44	62	45	37	59	39	32	51	33	28	45	29	24	39	26	32	35	23	29
			Exposed	62	62	53	62	57	47	62	51	42	62	46	38	62	42	35	58	38	32	53	35	29	45	30	24	39	25	32	33	33	27	29	29	24	26	26	~~21~~	35	23	~~19~~
		20-27	Interior	76	76	76	76	76	76	76	76	76	76	76	76	76	76	65	76	76	56	76	64	50	76	54	40	76	47	33	72	40	28	60	35	24	53	31	21	47	28	19
			Exposed	76	76	64	76	76	54	76	62	47	76	56	41	76	50	36	76	46	32	76	42	29	61	36	24	52	31	21	45	26	27	39	23	24	35	31	21	31	27	19
		27-45	Interior	86	86	86	86	86	86	86	86	86	86	86	86	86	86	84	86	86	80	85	85	63	80	79	51	65	58	42	56	51	36	49	44	30	43	39	26	39	35	23
			Exposed	86	86	84	86	86	80	86	84	59	86	80	52	82	63	47	64	58	42	59	53	38	50	45	31	43	38	26	37	33	22	32	29	19	29	26	24	25	23	21
	D	0-7	Interior	63	63	63	63	63	63	63	63	61	63	63	55	63	63	50	63	63	46	63	59	42	63	50	35	59	43	30	51	37	26	44	32	23	39	29	31	35	25	27
			Exposed	63	63	50	63	63	45	63	57	40	63	51	36	63	46	33	58	42	30	53	39	27	45	33	23	38	28	30	33	24	26	29	32	23	26	28	~~20~~	34	25	~~18~~
		7-20	Interior	66	66	66	66	66	60	66	66	54	66	59	49	66	54	44	66	49	40	66	45	37	58	38	31	49	32	27	43	28	23	37	25	31	33	33	27	29	29	24
			Exposed	66	53	44	66	48	39	66	43	35	59	39	32	54	35	29	49	32	26	45	29	24	38	25	31	32	32	27	28	28	23	25	24	~~20~~	33	~~21~~	~~18~~	29	~~19~~	~~16~~
		20-27	Interior	80	80	80	80	80	80	80	80	80	80	80	57	80	65	50	80	59	44	80	54	40	80	46	32	68	39	27	58	34	23	50	30	20	44	26	27	39	23	24
			Exposed	80	64	50	80	58	43	80	52	37	80	47	33	78	42	29	66	39	26	60	35	24	51	30	20	44	26	27	38	34	23	33	29	20	29	26	~~18~~	26	23	~~16~~
		27-45	Interior	88	88	88	88	88	88	88	88	85	88	88	81	88	86	64	86	82	56	85	76	50	64	57	41	55	49	34	47	42	29	41	37	25	37	33	21	32	29	19
			Exposed	88	86	63	88	81	55	83	65	48	65	58	42	59	53	38	54	48	34	49	44	31	42	37	25	36	32	21	31	28	27	27	24	23	24	33	20	32	29	18
50	B	0-7	Interior	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	45	48	48	39	48	48	34	48	43	30
			Exposed	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	46	48	48	39	48	48	34	48	41	29	48	36	25	43	32	34	39	28	30
		7-20	Interior	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	45	52	48	39	52	42	34	51	37	30	50	32	27	50	32	27
			Exposed	52	52	52	52	52	52	52	52	52	52	52	52	52	52	49	52	52	45	52	50	41	52	42	35	52	36	30	48	31	26	42	27	34	37	24	30	32	32	27
		20-27	Interior	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	52	66	57	43	66	50	36	64	44	31	62	39	27
			Exposed	66	66	66	66	66	66	66	66	66	66	66	66	66	66	57	66	66	51	66	60	45	66	51	37	66	43	30	64	38	26	56	33	23	49	29	20	44	26	27
		27-45	Interior	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	74	74	69	69	69	54	65	63	46	61	55	40	55	49	35
			Exposed	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	65	77	77	57	77	63	47	61	54	39	53	47	33	46	41	28	41	36	24	36	32	21
	C	0-7	Interior	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	42	48	48	36	48	44	31	48	39	27	47	34	24	41	30	32
			Exposed	48	48	48	48	48	48	48	48	48	48	48	43	48	48	39	48	48	36	48	46	33	48	39	28	46	33	24	40	29	31	35	25	27	31	34	24	27	30	~~21~~
		7-20	Interior	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	48	52	52	44	52	45	37	52	39	32	50	33	28	45	29	24	39	26	32	35	23	29
			Exposed	52	52	52	52	52	47	52	51	42	52	46	38	52	42	35	52	38	32	52	35	29	45	30	24	39	25	32	33	33	27	29	29	24	26	26	~~21~~	35	23	~~19~~
		20-27	Interior	66	66	66	66	66	66	66	66	66	66	66	66	66	66	65	66	66	56	66	64	50	66	54	40	65	47	33	62	40	28	60	35	24	53	31	21	47	28	19
			Exposed	66	66	64	66	66	54	66	62	47	66	56	41	66	50	36	66	46	32	66	42	29	61	36	24	52	31	21	45	26	27	39	23	24	35	31	21	31	27	19
		27-45	Interior	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	76	76	76	73	73	63	67	67	51	63	58	42	56	51	36	49	44	30	43	39	26	39	35	23
			Exposed	77	77	77	77	77	77	77	77	59	77	77	52	77	63	47	64	58	42	59	53	38	50	45	31	43	38	26	37	33	22	32	29	19	29	26	24	25	23	21
	D	0-7	Interior	53	53	53	53	53	53	53	53	53	53	53	53	53	53	50	53	53	46	53	53	42	53	50	35	53	43	30	51	37	26	44	32	23	39	29	31	35	25	27
			Exposed	53	53	50	53	53	45	53	53	40	53	51	36	53	46	33	53	42	30	53	39	27	45	33	23	38	28	30	33	24	26	29	32	23	26	28	~~20~~	34	25	~~18~~
		7-20	Interior	57	57	57	57	57	57	57	57	54	57	57	49	57	54	44	57	49	40	57	45	37	56	38	31	49	32	27	43	28	23	37	25	31	33	33	27	29	29	24
			Exposed	57	53	44	57	48	39	57	43	35	57	39	32	54	35	29	49	32	26	45	29	24	38	25	31	32	32	27	28	28	23	25	24	~~20~~	33	~~21~~	~~18~~	29	~~19~~	~~16~~
		20-27	Interior	70	70	70	70	70	70	70	70	70	70	70	57	70	65	50	70	59	44	70	54	40	70	46	32	67	39	27	58	34	23	50	30	20	44	26	27	39	23	24
			Exposed	70	64	50	70	58	43	70	52	37	70	47	33	70	42	29	66	39	26	60	35	24	51	30	20	44	26	27	38	34	23	33	29	20	29	26	~~18~~	26	23	~~16~~
		27-45	Interior	82	82	82	82	82	82	82	82	82	82	82	81	80	80	64	76	76	56	73	73	50	64	57	41	55	49	34	47	42	29	41	37	25	37	33	21	32	29	19
			Exposed	82	82	63	82	81	55	82	65	48	65	58	42	59	53	38	54	48	34	49	44	31	42	37	25	36	32	21	31	28	27	27	24	23	24	33	20	32	29	18

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 3.00	19 sq.ft	LANDSCAPE	CROSS-SLOPE	NXT	NXT COMBO	Solarhooks CT2
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																						
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
60	B	0-7	Interior	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	39	40	40	34	40	40	30
			Exposed	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	39	40	40	34	40	40	29	40	36	25	40	32	34	39	28	30
		7-20	Interior	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	39	44	42	34	44	37	30	44	32	27
			Exposed	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	41	44	42	35	44	36	30	44	31	26	42	27	34	37	24	30	32	32	27
		20-27	Interior	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	52	58	57	43	58	50	36	56	44	31	55	39	27			
			Exposed	58	58	58	58	58	58	58	58	58	58	58	58	58	57	58	58	51	58	58	45	58	51	37	58	43	30	58	38	26	56	33	23	49	29	20	44	26	27	
		27-45	Interior	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	68	68	68	65	65	65	62	62	54	59	59	46	56	55	40	53	49	35
			Exposed	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	65	69	69	57	68	63	47	61	54	39	53	47	33	46	41	28	41	36	24	36	32	21
	C	0-7	Interior	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	36	40	40	31	40	39	27	40	34	24	40	30	32
			Exposed	40	40	40	40	40	40	40	40	40	40	40	40	40	39	40	40	36	40	40	33	40	39	28	40	33	24	40	29	31	35	25	27	31	34	24	27	30	21
		7-20	Interior	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	37	44	39	32	44	33	28	42	29	24	39	26	32	35	23	29
			Exposed	44	44	44	44	44	44	44	44	42	44	44	38	44	42	35	44	38	32	44	35	29	44	30	24	39	25	32	33	33	27	29	29	24	26	26	21	35	23	19
		20-27	Interior	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	56	58	58	50	58	54	40	57	47	33	55	40	28	53	35	24	51	31	21	47	28	19
			Exposed	58	58	58	58	58	54	58	58	47	58	56	41	58	50	36	58	46	32	58	42	29	58	36	24	52	31	21	45	26	27	39	23	24	35	31	21	31	27	19
		27-45	Interior	69	69	69	69	69	69	69	69	69	69	69	69	68	68	68	66	66	66	64	64	63	60	60	51	57	57	42	54	51	36	49	44	30	43	39	26	39	35	23
			Exposed	69	69	69	69	69	69	69	69	59	69	69	52	68	63	47	64	58	42	59	53	38	50	45	31	43	38	26	37	33	22	32	29	19	29	26	24	25	23	21
	D	0-7	Interior	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	42	44	44	35	44	43	30	44	37	26	44	32	23	39	29	31	35	25	27
			Exposed	44	44	44	44	44	44	44	44	40	44	44	36	44	44	33	44	42	30	44	39	27	44	33	23	38	28	30	33	24	26	29	32	23	26	28	20	34	25	18
		7-20	Interior	48	48	48	48	48	48	48	48	48	48	48	48	48	48	44	48	48	40	48	45	37	48	38	31	47	32	27	43	28	23	37	25	31	33	33	27	29	29	24
			Exposed	48	48	44	48	48	39	48	43	35	48	39	32	48	35	29	48	32	26	45	29	24	38	25	31	32	32	27	28	28	23	25	24	20	33	21	18	29	19	16
		20-27	Interior	63	63	63	63	63	63	63	63	63	63	63	57	63	63	50	63	59	44	63	54	40	61	46	32	59	39	27	56	34	23	50	30	20	44	26	27	39	23	24
			Exposed	63	63	50	63	58	43	63	52	37	63	47	33	63	42	29	63	39	26	60	35	24	51	30	20	44	26	27	38	34	23	33	29	20	29	26	18	26	23	16
		27-45	Interior	74	74	74	74	74	74	74	74	74	72	72	72	69	69	64	66	66	56	64	64	50	60	57	41	55	49	34	47	42	29	41	37	25	37	33	21	32	29	19
			Exposed	74	74	63	74	74	55	74	65	48	65	58	42	59	53	38	54	48	34	49	44	31	42	37	25	36	32	21	31	28	27	27	24	23	24	33	20	32	29	18
70	B	0-7	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	34	35	35	30
			Exposed	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	34	35	35	29	35	35	25	35	32	34	35	28	30
		7-20	Interior	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	34	38	37	30	38	32	27
			Exposed	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	35	38	36	30	38	31	26	38	27	34	37	24	30	32	32	27
		20-27	Interior	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	43	51	50	36	51	44	31	49	39	27
			Exposed	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	45	51	51	37	51	43	30	51	38	26	51	33	23	49	29	20	44	26	27
		27-45	Interior	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	61	61	61	59	59	59	56	56	54	54	54	46	52	52	40	49	49	35
			Exposed	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	57	61	61	47	59	54	39	53	47	33	46	41	28	41	36	24	36	32	21
	C	0-7	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	31	35	35	27	35	34	24	35	30	32
			Exposed	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	33	35	35	28	35	33	24	35	29	31	35	25	27	31	34	24	27	30	21
		7-20	Interior	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	37	38	38	32	38	33	28	38	29	24	37	26	32	35	23	29
			Exposed	38	38	38	38	38	38	38	38	38	38	38	38	38	35	38	38	32	38	35	29	38	30	24	38	25	32	33	33	27	29	29	24	26	26	21	35	23	19
		20-27	Interior	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	50	51	51	40	51	47	33	49	40	28	48	35	24	46	31	21	44	28	19
			Exposed	51	51	51	51	51	51	51	51	47	51	51	41	51	50	36	51	46	32	51	42	29	51	36	24	51	31	21	45	26	27	39	23	24	35	31	21	31	27	19
		27-45	Interior	62	62	62	62	62	62	62	62	62	62	62	61	61	61	60	60	60	58	58	58	58	55	55	51	52	52	42	50	50	36	47	44	30	43	39	26	39	35	23
			Exposed	62	62	62	62	62	62	62	62	59	62	62	52	61	61	47	60	58	42	58	53	38	50	45	31	43	38	26	37	33	22	32	29	19	29	26	24	25	23	21
	D	0-7	Interior	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	35	38	38	30	38	37	26	38	32	23	38	29	31	35	25	27
			Exposed	38	38	38	38	38	38	38	38	38	38	38	36	38	38	33	38	38	30	38	38	27	38	33	23	38	28	30	33	24	26	29	32	23	26	28	20	34	25	18
		7-20	Interior	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	40	42	42	37	42	38	31	42	32	27	41	28	23	37	25	31	33	33	27	29	29	24
			Exposed	42	42	42	42	42	39	42	42	35	42	39	32	42	35	29	42	32	26	42	29	24	38	25	31	32	32	27	28	28	23	25	24	20	33	21	18	29	19	16
		20-27	Interior	56	56	56	56	56	56	56	56	56	56	56	56	56	56	50	56	56	44	56	54	40	55	46	32	53	39	27	51	34	23	48	30	20	44	26	27	39	23	24
			Exposed	56	56	50	56	56	43	56	52	37	56	47	33	56	42	29	56	39	26	56	35	24	51	30	20	44	26	27	38	34	23	33	29	20	29	26	18	26	23	16
		27-45	Interior	67	67	67	67	67	67	66	66	66	64	64	64	62	62	62	60	60	56	59	59	50	55	55	41	52	49	34	47	42	29	41	37	25	37	33	21	32	29	19
			Exposed	67	67	63	67	67	55	66	65	48	64	58	42	59	53	38	54	48	34	49	44	31	42	37	25	36	32	21	31	28	27	27	24	23	24	33	20	32	29	18
80	B	0-7	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
			Exposed	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	25	30	30	34	30	28	30
		7-20	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	32	27
			Exposed	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	30	33	31	26	33	27	34	33	24	30	32	32	27
		20-27	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	43	45	45	36	45	44	31	45	39	27
			Exposed	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	37	45	43	30	45	38	26	45	33	23	45	29	20	44	26	27
		27-45	Interior	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	54	54	54	52	52	52	50	50	46	48	48	40	46	46	35
			Exposed	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	47	54	54	39	52	47	33	46	41	28	41	36	24	36	32	21
	C	0-7	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	27	30	30	24	30	30	32
			Exposed	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	28	30	30	24	30	29	31	30	25	27	30	34	24	27	30	21
		7-20	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	32	33	33	28	33	29	24	33	26	32	32	23	29
			Exposed	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	32	33	33	29	33	30	24	33	25	32	33	33	27	29	29	24	26	26	21	35	23	19
		20-27	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	40	45	45	33	45	40	28	43	35	24	42	31	21	40	28	19
			Exposed	45	45	45	45	45	45	45	45	45	45	45	41	45	45	36	45	45	32	45	42	29	45	36	24	45	31	21	45	26	27	39	23	24	35	31	21	31	27	19
		27-45	Interior	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	55	55	55	53	53	53	51	51	51	49	49	42	46	46	36	44	44	30	42	39	26	39	35	23
			Exposed	56	56	56	56	56	56	56	56	56	56	56	52	56	56	47	55	55	42	53	53	38	50	45	31	43	38	26	37	33	22	32	29	19	29	26	24	25	23	21
	D	0-7	Interior	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	30	34	34	26	34	32	23	34	29	31	34	25	27
			Exposed	34	34	34	34	34	34	34	34	34	34	34	34	34	34	33	34	34	30	34	34	27	34	33	23	34	28	30	33	24	26	29	32	23	26	28	20	34	25	18
		7-20	Interior	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	31	37	32	27	37	28	23	36	25	31	33	33	27	29	29	24
			Exposed	37	37	37	37	37	37	37	37	35	37	37	32	37	35	29	37	32	26	37	29	24	37	25	31	32	32	27	28	28	23	25	24	20	33	21	18	29	19	16
		20-27	Interior	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	44	49	49	40	49	46	32	48	39	27	46	34	23	44	30	20	43	26	27	39	23	24
			Exposed	49	49	49	49	49	43	49	49	37	49	47	33	49	42	29	49	39	26	49	35	24	49	30	20	44	26	27	38	34	23	33	29	20	29	26	18	26	23	16
		27-45	Interior	61	61	61	61	61	61	60	60	60	59	59	59	57	57	57	56	56	56	54	54	50	51	51	41	48	48	34	46	42	29	41	37	25	37	33	21	32	29	19
			Exposed	61	61	61	61	61	55	60	60	48	59	58	42	57	53	38	54	48	34	49	44	31	42	37	25	36	32	21	31	28	27	27	24	23	24	33	20	32	29	18

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 3.00	19 sq.ft	LANDSCAPE	CROSS-SLOPE	NXT	NXT COMBO	Solarhooks CT2
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																						
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
90	B	0-7	Interior	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27
			Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	25	27	27	34	27	27	30
		7-20	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	27
			Exposed	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	26	30	27	34	30	24	30	30	32	27
		20-27	Interior	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	36	40	40	31	40	39	27
			Exposed	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	37	40	40	30	40	38	26	40	33	23	40	29	20	40	26	27
		27-45	Interior	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	50	50	50	48	48	48	46	46	46	44	44	40	43	43	35
			Exposed	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	47	50	50	39	48	47	33	46	41	28	41	36	24	36	32	21
	C	0-7	Interior	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	24	27	27	32
			Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	24	27	27	31	27	25	27	27	34	24	27	30	~~21~~
		7-20	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	28	30	29	24	30	26	32	30	23	29
			Exposed	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	24	30	25	32	30	33	27	29	29	24	26	26	~~21~~	35	23	~~19~~
		20-27	Interior	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	33	40	40	28	40	35	24	39	31	21	37	28	19
			Exposed	40	40	40	40	40	40	40	40	40	40	40	40	40	40	36	40	40	32	40	40	29	40	36	24	40	31	21	40	26	27	39	23	24	35	31	21	31	27	19
		27-45	Interior	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	50	50	50	49	49	49	47	47	47	45	45	42	43	43	36	41	41	30	39	39	26	37	35	23
			Exposed	51	51	51	51	51	51	51	51	51	51	51	51	51	51	47	50	50	42	49	49	38	47	45	31	43	38	26	37	33	22	32	29	19	29	26	24	25	23	21
	D	0-7	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	26	30	30	23	30	29	31	30	25	27
			Exposed	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	27	30	30	23	30	28	30	30	24	26	29	32	23	26	28	~~20~~	34	25	~~18~~
		7-20	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	31	33	32	27	33	28	23	33	25	31	32	33	27	29	29	24
			Exposed	33	33	33	33	33	33	33	33	33	33	33	32	33	33	29	33	32	26	33	29	24	33	25	31	32	32	27	28	28	23	25	24	~~20~~	33	~~21~~	~~18~~	29	~~19~~	~~16~~
		20-27	Interior	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	40	44	44	32	44	39	27	43	34	23	41	30	20	39	26	27	38	23	24
			Exposed	44	44	44	44	44	43	44	44	37	44	44	33	44	42	29	44	39	26	44	35	24	44	30	20	44	26	27	38	34	23	33	29	20	29	26	~~18~~	26	23	~~16~~
		27-45	Interior	56	56	56	56	56	56	56	56	56	54	54	54	53	53	53	52	52	52	50	50	50	48	48	41	45	45	34	43	42	29	41	37	25	37	33	21	32	29	19
			Exposed	56	56	56	56	56	55	56	56	48	54	54	42	53	53	38	52	48	34	49	44	31	42	37	25	36	32	21	31	28	27	27	24	23	24	33	20	32	29	18
100	B	0-7	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
			Exposed	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	34	25	25	30
		7-20	Interior	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27
			Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	26	27	27	34	27	24	30	27	32	27
		20-27	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	31	36	36	27
			Exposed	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	30	36	36	26	36	33	23	36	29	20	36	26	27
		27-45	Interior	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	45	45	45	43	43	43	42	42	40	40	40	35
			Exposed	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	39	45	45	33	43	41	28	41	36	24	36	32	21
	C	0-7	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	24	25	25	32
			Exposed	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	24	25	25	31	25	25	27	25	34	24	25	30	~~21~~
		7-20	Interior	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	24	27	26	32	27	23	29
			Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	24	27	25	32	27	33	27	27	29	24	26	26	~~21~~	35	23	~~19~~
		20-27	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	33	36	36	28	36	35	24	36	31	21	35	28	19
			Exposed	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	32	36	36	29	36	36	24	36	31	21	36	26	27	36	23	24	35	31	21	31	27	19
		27-45	Interior	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	44	44	44	42	42	42	40	40	36	39	39	30	37	37	26	35	35	23
			Exposed	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	42	46	46	38	44	44	31	42	38	26	37	33	22	32	29	19	29	26	24	25	23	21
	D	0-7	Interior	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	26	27	27	23	27	27	31	27	25	27
			Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	23	27	27	30	27	24	26	27	32	23	26	28	~~20~~	34	25	~~18~~
		7-20	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	27	30	28	23	30	25	31	29	33	27	28	29	24
			Exposed	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	26	30	29	24	30	25	31	30	32	27	28	28	23	25	24	~~20~~	33	~~21~~	~~18~~	29	~~19~~	~~16~~
		20-27	Interior	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	32	40	39	27	39	34	23	38	30	20	37	26	27	35	23	24
			Exposed	40	40	40	40	40	40	40	40	37	40	40	33	40	40	29	40	39	26	40	35	24	40	30	20	40	26	27	38	34	23	33	29	20	29	26	~~18~~	26	23	~~16~~
		27-45	Interior	51	51	51	51	51	51	51	51	51	50	50	50	49	49	49	48	48	48	47	47	47	45	45	41	43	43	34	41	41	29	38	37	25	36	33	21	32	29	19
			Exposed	51	51	51	51	51	51	51	51	48	50	50	42	49	49	38	48	48	34	47	44	31	42	37	25	36	32	21	31	28	27	27	24	23	24	33	20	32	29	18

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 3.00	23 sq.ft	PORTRAIT	CROSS-SLOPE	NXT	NXT COMBO	Solarhooks CT2
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																						
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
0	B	0-7	Interior	74	74	74	74	74	74	74	74	68	74	74	56	74	74	48	74	70	41	74	61	35	74	46	30	60	37	25	48	31	22	39	27	19	33	24	17	29	21	15
			Exposed	74	74	47	74	67	39	74	57	34	74	48	31	69	41	28	59	36	25	51	33	23	39	28	19	32	24	17	28	20	14	24	18	19	21	16	17	19	14	15
		7-20	Interior	74	74	74	74	74	73	74	74	58	74	69	47	74	56	39	74	47	34	68	40	31	54	32	26	44	27	22	36	24	19	32	21	17	28	18	15	25	16	13
			Exposed	74	56	39	74	45	33	64	37	30	56	33	27	49	30	24	43	27	22	38	25	20	32	21	17	27	18	15	24	15	19	21	13	17	18	18	15	16	16	~~13~~
		20-27	Interior	75	75	75	75	75	75	75	75	75	75	75	75	75	75	61	75	67	49	75	56	41	75	41	31	66	33	26	54	28	21	45	25	18	38	22	15	33	19	13
			Exposed	75	75	60	75	63	47	75	52	38	75	43	32	74	36	28	65	33	25	57	30	22	46	25	18	37	21	15	32	19	13	28	16	11	24	14	15	22	19	13
		27-45	Interior	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	63	76	76	54	76	60	40	60	46	32	44	36	27	35	31	23	31	27	20	27	24	17
			Exposed	76	76	75	76	76	61	76	75	50	76	62	42	72	52	36	58	45	32	48	38	28	35	32	23	30	27	19	26	23	16	23	20	14	20	18	12	18	16	16
	C	0-7	Interior	74	74	53	74	74	44	74	63	37	74	54	33	74	46	30	66	40	27	57	35	25	44	30	21	35	25	18	30	22	15	26	19	13	23	17	18	20	15	16
			Exposed	74	46	30	64	38	26	53	34	24	45	30	21	39	27	19	34	25	18	31	23	16	27	19	14	23	16	18	20	14	15	17	19	~~13~~	15	17	~~12~~	20	15	~~10~~
		7-20	Interior	74	65	44	74	51	36	71	42	32	62	35	29	54	32	26	47	29	24	42	26	22	34	22	18	29	19	16	25	16	14	22	14	18	19	19	16	17	17	14
			Exposed	54	32	26	46	28	23	40	25	21	35	23	19	32	21	17	29	19	16	26	17	14	22	15	18	19	19	16	16	16	~~13~~	14	14	~~12~~	19	~~13~~	~~10~~	17	~~11~~	9
		20-27	Interior	75	75	71	75	73	55	75	59	44	75	49	36	75	41	31	71	35	28	63	32	25	50	27	20	41	23	16	34	20	14	30	17	12	26	15	16	23	14	14
			Exposed	75	40	31	69	34	27	59	31	23	52	28	20	45	25	18	40	23	16	36	21	14	30	18	12	26	15	16	22	20	13	19	17	~~12~~	17	15	~~10~~	15	~~13~~	9
		27-45	Interior	76	76	76	76	76	69	76	76	57	76	71	47	76	59	40	68	50	35	56	43	31	40	34	25	32	29	21	28	25	18	24	22	15	22	19	13	19	17	11
			Exposed	76	59	40	64	48	34	51	40	29	42	35	26	35	31	23	32	29	21	29	26	19	25	22	15	21	19	13	18	16	16	16	14	14	14	19	12	19	17	~~10~~
	D	0-7	Interior	74	68	40	74	57	34	74	48	30	68	41	27	58	35	25	50	32	23	43	29	21	34	25	17	29	21	15	25	18	20	22	16	17	19	14	15	17	19	~~13~~
			Exposed	57	35	25	48	31	22	41	28	20	35	25	18	32	23	16	29	21	15	26	19	13	22	16	17	19	14	15	16	18	~~13~~	14	16	~~11~~	19	14	~~10~~	17	~~12~~	9
		7-20	Interior	74	45	34	64	37	30	56	33	27	48	29	24	43	27	22	38	24	20	34	22	18	29	19	15	24	16	13	21	14	17	18	18	15	16	16	~~13~~	14	14	~~12~~
			Exposed	42	26	22	36	24	19	33	21	17	29	19	16	27	17	14	24	16	20	22	14	18	19	18	15	16	16	~~13~~	14	~~14~~	~~11~~	18	~~12~~	~~10~~	16	~~11~~	9	14	9	8
		20-27	Interior	75	64	48	75	52	38	75	42	32	73	35	28	63	32	25	56	29	22	50	27	20	40	23	16	33	19	13	29	17	11	25	15	15	22	19	13	19	17	~~12~~
			Exposed	63	32	25	54	29	21	47	26	19	41	23	16	36	21	14	33	19	13	30	17	12	25	15	15	22	19	13	19	17	~~11~~	16	14	~~10~~	14	~~13~~	9	19	~~11~~	8
		27-45	Interior	76	76	61	76	76	50	76	62	42	70	52	35	57	44	31	47	37	28	39	34	25	32	28	20	27	24	17	23	21	14	20	18	12	18	16	16	16	14	14
			Exposed	56	43	31	45	36	27	36	32	24	32	29	21	29	26	19	27	24	17	24	22	15	21	19	12	18	16	16	15	14	13	13	18	~~11~~	18	16	~~10~~	16	14	9
10	B	0-7	Interior	52	52	52	52	52	52	52	52	52	52	52	52	52	52	48	52	52	41	52	52	35	52	46	30	52	37	25	48	31	22	39	27	19	33	24	17	29	21	15
			Exposed	52	52	47	52	52	39	52	52	34	52	48	31	52	41	28	52	36	25	51	33	23	39	28	19	32	24	17	28	20	14	24	18	19	21	16	17	19	14	15
		7-20	Interior	52	52	52	52	52	52	52	52	52	52	52	47	52	52	39	52	47	34	52	40	31	52	32	26	44	27	22	36	24	19	32	21	17	28	18	15	25	16	13
			Exposed	52	52	39	52	45	33	52	37	30	52	33	27	49	30	24	43	27	22	38	25	20	32	21	17	27	18	15	24	15	19	21	13	17	18	18	15	16	16	~~13~~
		20-27	Interior	69	69	69	69	69	69	69	69	69	69	69	69	69	69	61	69	67	49	69	56	41	69	41	31	66	33	26	54	28	21	45	25	18	38	22	15	33	19	13
			Exposed	69	69	60	69	63	47	69	52	38	69	43	32	69	36	28	65	33	25	57	30	22	46	25	18	37	21	15	32	19	13	28	16	11	24	14	15	22	19	13
		27-45	Interior	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	63	74	74	54	74	60	40	60	46	32	44	36	27	35	31	23	31	27	20	27	24	17
			Exposed	74	74	74	74	74	61	74	74	50	74	62	42	72	52	36	58	45	32	48	38	28	35	32	23	30	27	19	26	23	16	23	20	14	20	18	12	18	16	16
	C	0-7	Interior	52	52	52	52	52	44	52	52	37	52	52	33	52	46	30	52	40	27	52	35	25	44	30	21	35	25	18	30	22	15	26	19	13	23	17	18	20	15	16
			Exposed	52	46	30	52	38	26	52	34	24	45	30	21	39	27	19	34	25	18	31	23	16	27	19	14	23	16	18	20	14	15	17	19	~~13~~	15	17	~~12~~	20	15	~~10~~
		7-20	Interior	52	52	44	52	51	36	52	42	32	52	35	29	52	32	26	47	29	24	42	26	22	34	22	18	29	19	16	25	16	14	22	14	18	19	19	16	17	17	14
			Exposed	52	32	26	46	28	23	40	25	21	35	23	19	32	21	17	29	19	16	26	17	14	22	15	18	19	19	16	16	16	~~13~~	14	14	~~12~~	19	~~13~~	~~10~~	17	~~11~~	9
		20-27	Interior	69	69	69	69	69	55	69	59	44	69	49	36	69	41	31	69	35	28	63	32	25	50	27	20	41	23	16	34	20	14	30	17	12	26	15	16	23	14	14
			Exposed	69	40	31	69	34	27	59	31	23	52	28	20	45	25	18	40	23	16	36	21	14	30	18	12	26	15	16	22	20	13	19	17	~~12~~	17	15	~~10~~	15	~~13~~	9
		27-45	Interior	74	74	74	74	74	69	74	74	57	74	71	47	74	59	40	68	50	35	56	43	31	40	34	25	32	29	21	28	25	18	24	22	15	22	19	13	19	17	11
			Exposed	74	59	40	64	48	34	51	40	29	42	35	26	35	31	23	32	29	21	29	26	19	25	22	15	21	19	13	18	16	16	16	14	14	14	19	12	19	17	~~10~~
	D	0-7	Interior	52	52	40	52	52	34	52	48	30	52	41	27	52	35	25	50	32	23	43	29	21	34	25	17	29	21	15	25	18	20	22	16	17	19	14	15	17	19	~~13~~
			Exposed	52	35	25	48	31	22	41	28	20	35	25	18	32	23	16	29	21	15	26	19	13	22	16	17	19	14	15	16	18	~~13~~	14	16	~~11~~	19	14	~~10~~	17	~~12~~	9
		7-20	Interior	52	45	34	52	37	30	52	33	27	48	29	24	43	27	22	38	24	20	34	22	18	29	19	15	24	16	13	21	14	17	18	18	15	16	16	~~13~~	14	14	~~12~~
			Exposed	42	26	22	36	24	19	33	21	17	29	19	16	27	17	14	24	16	20	22	14	18	19	18	15	16	16	~~13~~	14	~~14~~	~~11~~	18	~~12~~	~~10~~	16	~~11~~	9	14	9	8
		20-27	Interior	70	64	48	70	52	38	70	42	32	70	35	28	63	32	25	56	29	22	50	27	20	40	23	16	33	19	13	29	17	11	25	15	15	22	19	13	19	17	~~12~~
			Exposed	63	32	25	54	29	21	47	26	19	41	23	16	36	21	14	33	19	13	30	17	12	25	15	15	22	19	13	19	17	~~11~~	16	14	~~10~~	14	~~13~~	9	19	~~11~~	8
		27-45	Interior	75	75	61	75	75	50	75	62	42	70	52	35	57	44	31	47	37	28	39	34	25	32	28	20	27	24	17	23	21	14	20	18	12	18	16	16	16	14	14
			Exposed	56	43	31	45	36	27	36	32	24	32	29	21	29	26	19	27	24	17	24	22	15	21	19	12	18	16	16	15	14	13	13	18	~~11~~	18	16	~~10~~	16	14	9
20	B	0-7	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	35	36	36	30	36	36	25	36	31	22	36	27	19	33	24	17	29	21	15
			Exposed	36	36	36	36	36	36	36	36	34	36	36	31	36	36	28	36	36	25	36	33	23	36	28	19	32	24	17	28	20	14	24	18	19	21	16	17	19	14	15
		7-20	Interior	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	34	37	37	31	37	32	26	37	27	22	36	24	19	32	21	17	28	18	15	25	16	13
			Exposed	37	37	37	37	37	33	37	37	30	37	33	27	37	30	24	37	27	22	37	25	20	32	21	17	27	18	15	24	15	19	21	13	17	18	18	15	16	16	~~13~~
		20-27	Interior	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	49	54	54	41	54	41	31	54	33	26	54	28	21	45	25	18	38	22	15	33	19	13
			Exposed	54	54	54	54	54	47	54	52	38	54	43	32	54	36	28	54	33	25	54	30	22	46	25	18	37	21	15	32	19	13	28	16	11	24	14	15	22	19	13
		27-45	Interior	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	54	60	60	40	60	46	32	44	36	27	35	31	23	31	27	20	27	24	17
			Exposed	60	60	60	60	60	60	60	60	50	60	60	42	60	52	36	58	45	32	48	38	28	35	32	23	30	27	19	26	23	16	23	20	14	20	18	12	18	16	16
	C	0-7	Interior	36	36	36	36	36	36	36	36	36	36	36	33	36	36	30	36	36	27	36	35	25	36	30	21	35	25	18	30	22	15	26	19	13	23	17	18	20	15	16
			Exposed	36	36	30	36	36	26	36	34	24	36	30	21	36	27	19	34	25	18	31	23	16	27	19	14	23	16	18	20	14	15	17	19	~~13~~	15	17	~~12~~	20	15	~~10~~
		7-20	Interior	37	37	37	37	37	36	37	37	32	37	35	29	37	32	26	37	29	24	37	26	22	34	22	18	29	19	16	25	16	14	22	14	18	19	19	16	17	17	14
			Exposed	37	32	26	37	28	23	37	25	21	35	23	19	32	21	17	29	19	16	26	17	14	22	15	18	19	19	16	16	16	~~13~~	14	14	~~12~~	19	~~13~~	~~10~~	17	~~11~~	9
		20-27	Interior	54	54	54	54	54	54	54	54	44	54	49	36	54	41	31	54	35	28	54	32	25	50	27	20	41	23	16	34	20	14	30	17	12	26	15	16	23	14	14
			Exposed	54	40	31	54	34	27	54	31	23	52	28	20	45	25	18	40	23	16	36	21	14	30	18	12	26	15	16	22	20	13	19	17	~~12~~	17	15	~~10~~	15	~~13~~	9
		27-45	Interior	60	60	60	60	60	60	60	60	57	60	60	47	60	59	40	60	50	35	56	43	31	40	34	25	32	29	21	28	25	18	24	22	15	22	19	13	19	17	11
			Exposed	60	59	40	60	48	34	51	40	29	42	35	26	35	31	23	32	29	21	29	26	19	25	22	15	21	19	13	18	16	16	16	14	14	14	19	12	19	17	~~10~~
	D	0-7	Interior	36	36	36	36	36	34	36	36	30	36	36	27	36	35	25	36	32	23	36	29	21	34	25	17	29	21	15	25	18	20	22	16	17	19	14	15	17	19	~~13~~
			Exposed	36	35	25	36	31	22	36	28	20	35	25	18	32	23	16	29	21	15	26	19	13	22	16	17	19	14	15	16	18	~~13~~	14	16	~~11~~	19	14	~~10~~	17	~~12~~	9
		7-20	Interior	37	37	34	37	37	30	37	33	27	37	29	24	37	27	22	37	24	20	34	22	18	29	19	15	24	16	13	21	14	17	18	18	15	16	16	~~13~~	14	14	~~12~~
			Exposed	37	26	22	36	24	19	33	21	17	29	19	16	27	17	14	24	16	20	22	14	18	19	18	15	16	16	~~13~~	14	~~14~~	~~11~~	18	~~12~~	~~10~~	16	~~11~~	9	14	9	8
		20-27	Interior	56	56	48	56	52	38	56	42	32	56	35	28	56	32	25	56	29	22	50	27	20	40	23	16	33	19	13	29	17	11	25	15	15	22	19	13	19	17	~~12~~
			Exposed	56	32	25	54	29	21	47	26	19	41	23	16	36	21	14	33	19	13	30	17	12	25	15	15	22	19	13	19	17	~~11~~	16	14	~~10~~	14	~~13~~	9	19	~~11~~	8
		27-45	Interior	62	62	61	62	62	50	62	62	42	62	52	35	57	44	31	47	37	28	39	34	25	32	28	20	27	24	17	23	21	14	20	18	12	18	16	16	16	14	14
			Exposed	56	43	31	45	36	27	36	32	24	32	29	21	29	26	19	27	24	17	24	22	15	21	19	12	18	16	16	15	14	13	13	18	~~11~~	18	16	~~10~~	16	14	9

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 3.00	23 sq.ft	PORTRAIT	CROSS-SLOPE	NXT	NXT COMBO	Solarhooks CT2
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																						
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
30	B	0-7	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	30	35	35	25	35	31	22	35	27	19	33	24	17	29	21	15
			Exposed	35	35	35	35	35	35	35	35	34	35	35	31	35	35	28	35	35	25	35	33	23	35	28	19	32	24	17	28	20	14	24	18	19	21	16	17	19	14	15
		7-20	Interior	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	34	37	37	31	37	32	26	37	27	22	36	24	19	32	21	17	28	18	15	25	16	13
			Exposed	37	37	37	37	37	33	37	37	30	37	33	27	37	30	24	37	27	22	37	25	20	32	21	17	27	18	15	24	15	19	21	13	17	18	18	15	16	16	~~13~~
		20-27	Interior	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	41	44	41	31	44	33	26	44	28	21	44	25	18	38	22	15	33	19	13
			Exposed	44	44	44	44	44	44	44	44	38	44	43	32	44	36	28	44	33	25	44	30	22	44	25	18	37	21	15	32	19	13	28	16	11	24	14	15	22	19	13
		27-45	Interior	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	40	49	46	32	44	36	27	35	31	23	31	27	20	27	24	17
			Exposed	51	51	51	51	51	51	51	51	50	51	51	42	51	51	36	51	45	32	48	38	28	35	32	23	30	27	19	26	23	16	23	20	14	20	18	12	18	16	16
	C	0-7	Interior	35	35	35	35	35	35	35	35	35	35	35	33	35	35	30	35	35	27	35	35	25	35	30	21	35	25	18	30	22	15	26	19	13	23	17	18	20	15	16
			Exposed	35	35	30	35	35	26	35	34	24	35	30	21	35	27	19	34	25	18	31	23	16	27	19	14	23	16	18	20	14	15	17	19	~~13~~	15	17	~~12~~	20	15	~~10~~
		7-20	Interior	37	37	37	37	37	36	37	37	32	37	35	29	37	32	26	37	29	24	37	26	22	34	22	18	29	19	16	25	16	14	22	14	18	19	19	16	17	17	14
			Exposed	37	32	26	37	28	23	37	25	21	35	23	19	32	21	17	29	19	16	26	17	14	22	15	18	19	19	16	16	16	~~13~~	14	14	~~12~~	19	~~13~~	~~10~~	17	~~11~~	9
		20-27	Interior	44	44	44	44	44	44	44	44	44	44	44	36	44	41	31	44	35	28	44	32	25	44	27	20	41	23	16	34	20	14	30	17	12	26	15	16	23	14	14
			Exposed	44	40	31	44	34	27	44	31	23	44	28	20	44	25	18	40	23	16	36	21	14	30	18	12	26	15	16	22	20	13	19	17	~~12~~	17	15	~~10~~	15	~~13~~	9
		27-45	Interior	51	51	51	51	51	51	51	51	51	51	51	47	51	51	40	50	50	35	48	43	31	40	34	25	32	29	21	28	25	18	24	22	15	22	19	13	19	17	11
			Exposed	51	51	40	51	48	34	51	40	29	42	35	26	35	31	23	32	29	21	29	26	19	25	22	15	21	19	13	18	16	16	16	14	14	14	19	12	19	17	~~10~~
	D	0-7	Interior	36	36	36	36	36	34	36	36	30	36	36	27	36	35	25	36	32	23	36	29	21	34	25	17	29	21	15	25	18	20	22	16	17	19	14	15	17	19	~~13~~
			Exposed	36	35	25	36	31	22	36	28	20	35	25	18	32	23	16	29	21	15	26	19	13	22	16	17	19	14	15	16	18	~~13~~	14	16	~~11~~	19	14	~~10~~	17	~~12~~	9
		7-20	Interior	37	37	34	37	37	30	37	33	27	37	29	24	37	27	22	37	24	20	34	22	18	29	19	15	24	16	13	21	14	17	18	18	15	16	16	~~13~~	14	14	~~12~~
			Exposed	37	26	22	36	24	19	33	21	17	29	19	16	27	17	14	24	16	20	22	14	18	19	18	15	16	16	~~13~~	14	~~14~~	~~11~~	18	~~12~~	~~10~~	16	~~11~~	9	14	9	8
		20-27	Interior	47	47	47	47	47	38	47	42	32	47	35	28	47	32	25	47	29	22	47	27	20	40	23	16	33	19	13	29	17	11	25	15	15	22	19	13	19	17	~~12~~
			Exposed	47	32	25	47	29	21	47	26	19	41	23	16	36	21	14	33	19	13	30	17	12	25	15	15	22	19	13	19	17	~~11~~	16	14	~~10~~	14	~~13~~	9	19	~~11~~	8
		27-45	Interior	53	53	53	53	53	50	53	53	42	53	52	35	51	44	31	47	37	28	39	34	25	32	28	20	27	24	17	23	21	14	20	18	12	18	16	16	16	14	14
			Exposed	53	43	31	45	36	27	36	32	24	32	29	21	29	26	19	27	24	17	24	22	15	21	19	12	18	16	16	15	14	13	13	18	~~11~~	18	16	~~10~~	16	14	9
40	B	0-7	Interior	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	25	29	29	22	29	27	19	29	24	17	29	24	17	29	21	15
			Exposed	29	29	29	29	29	29	29	29	29	29	29	29	29	29	28	29	29	25	29	29	23	29	28	19	29	24	17	28	20	14	24	18	19	21	16	17	19	14	15
		7-20	Interior	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	26	31	27	22	31	24	19	31	21	17	28	18	15	25	16	13
			Exposed	31	31	31	31	31	31	31	31	30	31	31	27	31	30	24	31	27	22	31	25	20	31	21	17	27	18	15	24	15	19	21	13	17	18	18	15	16	16	~~13~~
		20-27	Interior	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	31	38	33	26	38	28	21	38	25	18	37	22	15	33	19	13
			Exposed	38	38	38	38	38	38	38	38	38	38	38	32	38	36	28	38	33	25	38	30	22	38	25	18	37	21	15	32	19	13	28	16	11	24	14	15	22	19	13
		27-45	Interior	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	40	41	41	32	39	36	27	35	31	23	31	27	20	27	24	17
			Exposed	44	44	44	44	44	44	44	44	44	44	44	42	44	44	36	44	44	32	44	38	28	35	32	23	30	27	19	26	23	16	23	20	14	20	18	12	18	16	16
	C	0-7	Interior	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	27	29	29	25	29	29	21	29	25	18	29	22	15	26	19	13	23	17	18	20	15	16
			Exposed	29	29	29	29	29	26	29	29	24	29	29	21	29	27	19	29	25	18	29	23	16	27	19	14	23	16	18	20	14	15	17	19	~~13~~	15	17	~~12~~	20	15	~~10~~
		7-20	Interior	31	31	31	31	31	31	31	31	31	31	31	29	31	31	26	31	29	24	31	26	22	31	22	18	29	19	16	25	16	14	22	14	18	19	19	16	17	17	14
			Exposed	31	31	26	31	28	23	31	25	21	31	23	19	31	21	17	29	19	16	26	17	14	22	15	18	19	19	16	16	16	~~13~~	14	14	~~12~~	19	~~13~~	~~10~~	17	~~11~~	9
		20-27	Interior	38	38	38	38	38	38	38	38	38	38	38	36	38	38	31	38	35	28	38	32	25	38	27	20	38	23	16	34	20	14	30	17	12	26	15	16	23	14	14
			Exposed	38	38	31	38	34	27	38	31	23	38	28	20	38	25	18	38	23	16	36	21	14	30	18	12	26	15	16	22	20	13	19	17	~~12~~	17	15	~~10~~	15	~~13~~	9
		27-45	Interior	44	44	44	44	44	44	44	44	44	44	44	44	44	44	40	42	42	35	41	41	31	38	34	25	32	29	21	28	25	18	24	22	15	22	19	13	19	17	11
			Exposed	44	44	40	44	44	34	44	40	29	42	35	26	35	31	23	32	29	21	29	26	19	25	22	15	21	19	13	18	16	16	16	14	14	14	19	12	19	17	~~10~~
	D	0-7	Interior	31	31	31	31	31	31	31	31	30	31	31	27	31	31	25	31	31	23	31	29	21	31	25	17	29	21	15	25	18	20	22	16	17	19	14	15	17	19	~~13~~
			Exposed	31	31	25	31	31	22	31	28	20	31	25	18	31	23	16	29	21	15	26	19	13	22	16	17	19	14	15	16	18	~~13~~	14	16	~~11~~	19	14	~~10~~	17	~~12~~	9
		7-20	Interior	33	33	33	33	33	30	33	33	27	33	29	24	33	27	22	33	24	20	33	22	18	29	19	15	24	16	13	21	14	17	18	18	15	16	16	~~13~~	14	14	~~12~~
			Exposed	33	26	22	33	24	19	33	21	17	29	19	16	27	17	14	24	16	20	22	14	18	19	18	15	16	16	~~13~~	14	~~14~~	~~11~~	18	~~12~~	~~10~~	16	~~11~~	9	14	9	8
		20-27	Interior	40	40	40	40	40	38	40	40	32	40	35	28	40	32	25	40	29	22	40	27	20	40	23	16	33	19	13	29	17	11	25	15	15	22	19	13	19	17	~~12~~
			Exposed	40	32	25	40	29	21	40	26	19	40	23	16	36	21	14	33	19	13	30	17	12	25	15	15	22	19	13	19	17	~~11~~	16	14	~~10~~	14	~~13~~	9	19	~~11~~	8
		27-45	Interior	46	46	46	46	46	46	46	46	42	45	45	35	43	43	31	42	37	28	39	34	25	32	28	20	27	24	17	23	21	14	20	18	12	18	16	16	16	14	14
			Exposed	46	43	31	45	36	27	36	32	24	32	29	21	29	26	19	27	24	17	24	22	15	21	19	12	18	16	16	15	14	13	13	18	~~11~~	18	16	~~10~~	16	14	9
50	B	0-7	Interior	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	22	24	24	19	24	24	17	24	20	14	24	18	19	21	16	17	24	21	15
			Exposed	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	24	24	19	24	24	17	24	20	14	24	18	19	21	16	17	19	14	15
		7-20	Interior	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	22	26	26	22	26	24	19	26	21	17	25	18	15	25	16	13
			Exposed	26	26	26	26	26	26	26	26	26	26	26	26	26	26	24	26	26	22	26	25	20	26	21	17	26	18	15	24	15	19	21	13	17	18	18	15	16	16	~~13~~
		20-27	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	31	33	33	26	33	28	21	33	25	18	32	22	15	31	19	13
			Exposed	33	33	33	33	33	33	33	33	33	33	33	32	33	33	28	33	33	25	33	30	22	33	25	18	33	21	15	32	19	13	28	16	11	24	14	15	22	19	13
		27-45	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	38	38	38	36	36	32	34	34	27	32	31	23	31	27	20	27	24	17
			Exposed	39	39	39	39	39	39	39	39	39	39	39	39	39	39	36	39	39	32	39	38	28	35	32	23	30	27	19	26	23	16	23	20	14	20	18	12	18	16	16
	C	0-7	Interior	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	21	24	24	18	24	22	15	24	19	13	23	17	18	20	15	16
			Exposed	24	24	24	24	24	24	24	24	24	24	24	21	24	24	19	24	24	18	24	23	16	24	19	14	23	16	18	20	14	15	17	19	~~13~~	15	17	~~12~~	20	15	~~10~~
		7-20	Interior	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	24	26	26	22	26	22	18	26	19	16	25	16	14	22	14	18	19	19	16	17	17	14
			Exposed	26	26	26	26	26	23	26	25	21	26	23	19	26	21	17	26	19	16	26	17	14	22	15	18	19	19	16	16	16	~~13~~	14	14	~~12~~	19	~~13~~	~~10~~	17	~~11~~	9
		20-27	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	31	33	33	28	33	32	25	33	27	20	32	23	16	31	20	14	30	17	12	26	15	16	23	14	14
			Exposed	33	33	31	33	33	27	33	31	23	33	28	20	33	25	18	33	23	16	33	21	14	30	18	12	26	15	16	22	20	13	19	17	~~12~~	17	15	~~10~~	15	~~13~~	9
		27-45	Interior	39	39	39	39	39	39	39	39	39	39	39	38	38	38	37	37	35	35	35	35	31	33	33	25	31	29	21	28	25	18	24	22	15	22	19	13	19	17	11
			Exposed	39	39	39	39	39	34	39	39	29	39	35	26	35	31	23	32	29	21	29	26	19	25	22	15	21	19	13	18	16	16	16	14	14	14	19	12	19	17	~~10~~
	D	0-7	Interior	26	26	26	26	26	26	26	26	26	26	26	26	26	26	25	26	26	23	26	26	21	26	25	17	26	21	15	25	18	20	22	16	17	19	14	15	17	19	~~13~~
			Exposed	26	26	25	26	26	22	26	26	20	26	25	18	26	23	16	26	21	15	26	19	13	22	16	17	19	14	15	16	18	~~13~~	14	16	~~11~~	19	14	~~10~~	17	~~12~~	9
		7-20	Interior	28	28	28	28	28	28	28	28	27	28	28	24	28	27	22	28	24	20	28	22	18	28	19	15	24	16	13	21	14	17	18	18	15	16	16	~~13~~	14	14	~~12~~
			Exposed	28	26	22	28	24	19	28	21	17	28	19	16	27	17	14	24	16	20	22	14	18	19	18	15	16	16	~~13~~	14	~~14~~	~~11~~	18	~~12~~	~~10~~	16	~~11~~	9	14	9	8
		20-27	Interior	35	35	35	35	35	35	35	35	32	35	35	28	35	32	25	35	29	22	35	27	20	35	23	16	33	19	13	29	17	11	25	15	15	22	19	13	19	17	~~12~~
			Exposed	35	32	25	35	29	21	35	26	19	35	23	16	35	21	14	33	19	13	30	17	12	25	15	15	22	19	13	19	17	~~11~~	16	14	~~10~~	14	~~13~~	9	19	~~11~~	8
		27-45	Interior	41	41	41	41	41	41	41	41	41	40	40	35	38	38	31	36	36	28	35	34	25	32	28	20	27	24	17	23	21	14	20	18	12	18	16	16	16	14	14
			Exposed	41	41	31	41	36	27	36	32	24	32	29	21	29	26	19	27	24	17	24	22	15	21	19	12	18	16	16	15	14	13	13	18	~~11~~	18	16	~~10~~	16	14	9

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 3.00	23 sq.ft	PORTRAIT	CROSS-SLOPE	NXT	NXT COMBO	Solarhooks CT2
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																								
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																								
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
60	B	0-7	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	19	20	20	17	20	20	15
			Exposed	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	19	20	20	17	20	20	14	20	18	19	20	16	17	19	14	15
		7-20	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	19	22	21	17	22	18	15	22	16	13
			Exposed	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	20	22	21	17	22	18	15	22	15	19	21	13	17	18	18	15	16	16	~~13~~
		20-27	Interior	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	26	29	28	21	29	25	18	28	22	15	27	19	13
			Exposed	29	29	29	29	29	29	29	29	29	29	29	29	29	29	28	29	29	25	29	29	22	29	25	18	29	21	15	29	19	13	28	16	11	24	14	15	22	19	13
		27-45	Interior	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	32	32	32	31	31	27	29	29	23	28	27	20	27	24	17
			Exposed	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	32	34	34	28	34	32	23	30	27	19	26	23	16	23	20	14	20	18	12	18	16	16
	C	0-7	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	18	20	20	15	20	19	13	20	17	18	20	15	16
			Exposed	20	20	20	20	20	20	20	20	20	20	20	20	20	19	20	20	18	20	20	16	20	19	14	20	16	18	20	14	15	17	19	~~13~~	15	17	~~12~~	20	15	~~10~~
		7-20	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	18	22	19	16	22	16	14	21	14	18	19	19	16	17	17	14
			Exposed	22	22	22	22	22	22	22	22	21	22	22	19	22	21	17	22	19	16	22	17	14	22	15	18	19	19	16	16	16	~~13~~	14	14	~~12~~	19	~~13~~	~~10~~	17	~~11~~	9
		20-27	Interior	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	28	29	29	25	29	27	20	29	23	16	27	20	14	26	17	12	25	15	16	23	14	14
			Exposed	29	29	29	29	29	27	29	29	23	29	28	20	29	25	18	29	23	16	29	21	14	29	18	12	26	15	16	22	20	13	19	17	~~12~~	17	15	~~10~~	15	~~13~~	9
		27-45	Interior	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	33	33	33	32	32	31	30	30	25	28	28	21	27	25	18	24	22	15	22	19	13	19	17	11
			Exposed	34	34	34	34	34	34	34	34	29	34	34	26	34	31	23	32	29	21	29	26	19	25	22	15	21	19	13	18	16	16	16	14	14	14	19	12	19	17	~~10~~
	D	0-7	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	21	22	22	17	22	21	15	22	18	20	22	16	17	19	14	15	17	19	~~13~~
			Exposed	22	22	22	22	22	22	22	22	20	22	22	18	22	22	16	22	21	15	22	19	13	22	16	17	19	14	15	16	18	~~13~~	14	16	~~11~~	19	14	~~10~~	17	~~12~~	9
		7-20	Interior	24	24	24	24	24	24	24	24	24	24	24	24	24	24	22	24	24	20	24	22	18	24	19	15	23	16	13	21	14	17	18	18	15	16	16	~~13~~	14	14	~~12~~
			Exposed	24	24	22	24	24	19	24	21	17	24	19	16	24	17	14	24	16	20	22	14	18	19	18	15	16	16	~~13~~	14	~~14~~	~~11~~	18	~~12~~	~~10~~	16	~~11~~	9	14	9	8
		20-27	Interior	31	31	31	31	31	31	31	31	31	31	31	28	31	31	25	31	29	22	31	27	20	31	23	16	29	19	13	28	17	11	25	15	15	22	19	13	19	17	~~12~~
			Exposed	31	31	25	31	29	21	31	26	19	31	23	16	31	21	14	31	19	13	30	17	12	25	15	15	22	19	13	19	17	~~11~~	16	14	~~10~~	14	~~13~~	9	19	~~11~~	8
		27-45	Interior	37	37	37	37	37	37	36	36	36	35	35	35	34	34	31	33	33	28	32	32	25	30	28	20	27	24	17	23	21	14	20	18	12	18	16	16	16	14	14
			Exposed	37	37	31	37	36	27	36	32	24	32	29	21	29	26	19	27	24	17	24	22	15	21	19	12	18	16	16	15	14	13	13	18	~~11~~	18	16	~~10~~	16	14	9
70	B	0-7	Interior	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	15
			Exposed	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	14	17	17	19	17	16	17	17	14	15
		7-20	Interior	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	17	19	18	15	19	16	13
			Exposed	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	17	19	18	15	19	15	19	19	13	17	18	18	15	16	16	~~13~~
		20-27	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	21	25	25	18	25	22	15	24	19	13
			Exposed	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	22	25	25	18	25	21	15	25	19	13	25	16	11	24	14	15	22	19	13
		27-45	Interior	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	30	30	29	29	29	28	28	27	27	27	23	26	26	20	24	24	17
			Exposed	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	28	30	30	23	29	27	19	26	23	16	23	20	14	20	18	12	18	16	16
	C	0-7	Interior	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	15	17	17	13	17	17	18	17	15	16
			Exposed	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	16	17	17	14	17	16	18	17	14	15	17	19	~~13~~	15	17	~~12~~	20	15	~~10~~
		7-20	Interior	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	18	19	19	16	19	16	14	19	14	18	18	19	16	17	17	14
			Exposed	19	19	19	19	19	19	19	19	19	19	19	19	19	19	17	19	19	16	19	17	14	19	15	18	19	19	16	16	16	~~13~~	14	14	~~12~~	19	~~13~~	~~10~~	17	~~11~~	9
		20-27	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	20	25	23	16	25	20	14	24	17	12	23	15	16	22	14	14
			Exposed	25	25	25	25	25	25	25	25	23	25	25	20	25	25	18	25	23	16	25	21	14	25	18	12	25	15	16	22	20	13	19	17	~~12~~	17	15	~~10~~	15	~~13~~	9
		27-45	Interior	31	31	31	31	31	31	31	31	31	31	31	31	30	30	30	30	30	30	29	29	29	28	28	25	26	26	21	25	25	18	23	22	15	22	19	13	19	17	11
			Exposed	31	31	31	31	31	31	31	31	29	31	31	26	30	30	23	30	29	21	29	26	19	25	22	15	21	19	13	18	16	16	16	14	14	14	19	12	19	17	~~10~~
	D	0-7	Interior	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	17	19	19	15	19	18	20	19	16	17	19	14	15	17	19	~~13~~
			Exposed	19	19	19	19	19	19	19	19	19	19	19	18	19	19	16	19	19	15	19	19	13	19	16	17	19	14	15	16	18	~~13~~	14	16	~~11~~	19	14	~~10~~	17	~~12~~	9
		7-20	Interior	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	20	21	21	18	21	19	15	21	16	13	20	14	17	18	18	15	16	16	~~13~~	14	14	~~12~~
			Exposed	21	21	21	21	21	19	21	21	17	21	19	16	21	17	14	21	16	20	21	14	18	19	18	15	16	16	~~13~~	14	~~14~~	~~11~~	18	~~12~~	~~10~~	16	~~11~~	9	14	9	8
		20-27	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	25	28	28	22	28	27	20	27	23	16	26	19	13	25	17	11	24	15	15	22	19	13	19	17	~~12~~
			Exposed	28	28	25	28	28	21	28	26	19	28	23	16	28	21	14	28	19	13	28	17	12	25	15	15	22	19	13	19	17	~~11~~	16	14	~~10~~	14	~~13~~	9	19	~~11~~	8
		27-45	Interior	33	33	33	33	33	33	33	33	33	32	32	32	31	31	31	30	30	28	29	29	25	28	28	20	26	24	17	23	21	14	20	18	12	18	16	16	16	14	14
			Exposed	33	33	31	33	33	27	33	32	24	32	29	21	29	26	19	27	24	17	24	22	15	21	19	12	18	16	16	15	14	13	13	18	~~11~~	18	16	~~10~~	16	14	9
80	B	0-7	Interior	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
			Exposed	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	14	15	15	19	15	15	17	15	14	15
		7-20	Interior	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	15	16	16	13
			Exposed	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	15	16	15	19	16	13	17	16	18	15	16	16	~~13~~
		20-27	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	21	22	22	18	22	22	15	22	19	13
			Exposed	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	18	22	21	15	22	19	13	22	16	11	22	14	15	22	19	13
		27-45	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	27	27	27	26	26	26	25	25	23	24	24	20	23	23	17
			Exposed	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	23	27	27	19	26	23	16	23	20	14	20	18	12	18	16	16
	C	0-7	Interior	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	13	15	15	18	15	15	16
			Exposed	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	14	15	15	18	15	14	15	15	19	~~13~~	15	17	~~12~~	20	15	~~10~~
		7-20	Interior	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	14	16	14	18	16	19	16	16	17	14
			Exposed	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	14	16	15	18	16	19	16	16	16	~~13~~	14	14	~~12~~	19	~~13~~	~~10~~	17	~~11~~	9
		20-27	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	20	22	22	16	22	20	14	22	17	12	21	15	16	20	14	14
			Exposed	22	22	22	22	22	22	22	22	22	22	22	20	22	22	18	22	22	16	22	21	14	22	18	12	22	15	16	22	20	13	19	17	~~12~~	17	15	~~10~~	15	~~13~~	9
		27-45	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	27	27	27	27	27	27	25	25	25	24	24	21	23	23	18	22	22	15	21	19	13	19	17	11
			Exposed	28	28	28	28	28	28	28	28	28	28	28	26	28	28	23	27	27	21	27	26	19	25	22	15	21	19	13	18	16	16	16	14	14	14	19	12	19	17	~~10~~
	D	0-7	Interior	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	15	17	17	20	17	16	17	17	14	15	17	19	~~13~~
			Exposed	17	17	17	17	17	17	17	17	17	17	17	17	17	17	16	17	17	15	17	17	13	17	16	17	17	14	15	16	18	~~13~~	14	16	~~11~~	19	14	~~10~~	17	~~12~~	9
		7-20	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	15	18	16	13	18	14	17	18	18	15	16	16	~~13~~	14	14	~~12~~
			Exposed	18	18	18	18	18	18	18	18	17	18	18	16	18	17	14	18	16	20	18	14	18	18	18	15	16	16	~~13~~	14	~~14~~	~~11~~	18	~~12~~	~~10~~	16	~~11~~	9	14	9	8
		20-27	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	22	25	25	20	25	23	16	24	19	13	23	17	11	22	15	15	21	19	13	19	17	~~12~~
			Exposed	25	25	25	25	25	21	25	25	19	25	23	16	25	21	14	25	19	13	25	17	12	25	15	15	22	19	13	19	17	~~11~~	16	14	~~10~~	14	~~13~~	9	19	~~11~~	8
		27-45	Interior	30	30	30	30	30	30	30	30	30	29	29	29	29	29	29	28	28	28	27	27	25	26	26	20	24	24	17	23	21	14	20	18	12	18	16	16	16	14	14
			Exposed	30	30	30	30	30	27	30	30	24	29	29	21	29	26	19	27	24	17	24	22	15	21	19	12	18	16	16	15	14	13	13	18	~~11~~	18	16	~~10~~	16	14	9

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 3.00	23 sq.ft	PORTRAIT	CROSS-SLOPE	NXT	NXT COMBO	Solarhooks CT2
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																						
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
90	B	0-7	Interior	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
			Exposed	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	19	13	13	17	13	13	15
		7-20	Interior	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	13
			Exposed	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	19	15	13	17	15	18	15	15	16	~~13~~
		20-27	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	18	20	20	15	20	19	13
			Exposed	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	18	20	20	15	20	19	13	20	16	11	20	14	15	20	19	13
		27-45	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	24	24	24	23	23	23	22	22	20	21	21	17
			Exposed	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	23	25	25	19	24	23	16	23	20	14	20	18	12	18	16	16
	C	0-7	Interior	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	18	13	13	16
			Exposed	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	18	13	13	15	13	19	~~13~~	13	17	~~12~~	20	15	~~10~~
		7-20	Interior	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	14	15	14	18	15	19	16	15	17	14
			Exposed	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	14	15	15	18	15	19	16	15	16	~~13~~	14	14	~~12~~	19	~~13~~	~~10~~	17	~~11~~	9
		20-27	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	16	20	20	14	20	17	12	19	15	16	18	14	14
			Exposed	20	20	20	20	20	20	20	20	20	20	20	20	20	20	18	20	20	16	20	20	14	20	18	12	20	15	16	20	20	13	19	17	~~12~~	17	15	~~10~~	15	~~13~~	9
		27-45	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	23	23	23	22	22	21	21	21	18	20	20	15	19	19	13	19	17	11
			Exposed	25	25	25	25	25	25	25	25	25	25	25	25	25	25	23	25	25	21	25	25	19	23	22	15	21	19	13	18	16	16	16	14	14	14	19	12	19	17	~~10~~
	D	0-7	Interior	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	20	15	15	17	15	14	15	15	19	~~13~~
			Exposed	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	13	15	15	17	15	14	15	15	18	~~13~~	14	16	~~11~~	19	14	~~10~~	17	~~12~~	9
		7-20	Interior	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	15	16	16	13	16	14	17	16	18	15	16	16	~~13~~	14	14	~~12~~
			Exposed	16	16	16	16	16	16	16	16	16	16	16	16	16	16	14	16	16	20	16	14	18	16	18	15	16	16	~~13~~	14	~~14~~	~~11~~	18	~~12~~	~~10~~	16	~~11~~	9	14	9	8
		20-27	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	20	22	22	16	22	19	13	21	17	11	20	15	15	20	19	13	19	17	~~12~~
			Exposed	22	22	22	22	22	21	22	22	19	22	22	16	22	21	14	22	19	13	22	17	12	22	15	15	22	19	13	19	17	~~11~~	16	14	~~10~~	14	~~13~~	9	19	~~11~~	8
		27-45	Interior	28	28	28	28	28	28	28	28	28	27	27	27	26	26	26	26	26	26	25	25	25	24	24	20	23	23	17	21	21	14	20	18	12	18	16	16	16	14	14
			Exposed	28	28	28	28	28	27	28	28	24	27	27	21	26	26	19	26	24	17	24	22	15	21	19	12	18	16	16	15	14	13	13	18	~~11~~	18	16	~~10~~	16	14	9
100	B	0-7	Interior	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
			Exposed	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	18	12	12	17	12	12	15
		7-20	Interior	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
			Exposed	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	19	13	13	17	13	18	15	13	16	~~13~~
		20-27	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	15	18	18	13
			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	15	18	18	13	18	16	11	18	14	15	18	19	13
		27-45	Interior	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	22	22	22	21	21	21	21	21	20	20	20	17
			Exposed	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	19	22	22	16	21	20	14	20	18	12	18	16	16
	C	0-7	Interior	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	18	12	12	16
			Exposed	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	18	12	12	15	12	18	~~13~~	12	17	~~12~~	18	15	~~10~~
		7-20	Interior	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	18	13	19	16	13	17	14
			Exposed	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	18	13	19	16	13	16	~~13~~	13	14	~~12~~	19	~~13~~	~~10~~	17	~~11~~	9
		20-27	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	16	18	18	14	18	17	12	18	15	16	17	14	14
			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	16	18	18	14	18	18	12	18	15	16	18	20	13	18	17	~~12~~	17	15	~~10~~	15	~~13~~	9
		27-45	Interior	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	22	22	22	21	21	21	20	20	18	19	19	15	18	18	13	17	17	11
			Exposed	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	21	23	23	19	22	22	15	21	19	13	18	16	16	16	14	14	14	19	12	19	17	~~10~~
	D	0-7	Interior	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	20	13	13	17	13	13	15	13	19	~~13~~
			Exposed	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	17	13	13	15	13	18	~~13~~	13	16	~~11~~	19	14	~~10~~	17	~~12~~	9
		7-20	Interior	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	13	15	14	17	15	18	15	14	16	~~13~~	14	14	~~12~~
			Exposed	15	15	15	15	15	15	15	15	15	15	15	15	15	15	14	15	15	20	15	14	18	15	18	15	15	16	~~13~~	14	~~14~~	~~11~~	18	~~12~~	~~10~~	16	~~11~~	9	14	9	8
		20-27	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	16	20	19	13	20	17	11	19	15	15	18	19	13	17	17	~~12~~
			Exposed	20	20	20	20	20	20	20	20	19	20	20	16	20	20	14	20	19	13	20	17	12	20	15	15	20	19	13	19	17	~~11~~	16	14	~~10~~	14	~~13~~	9	19	~~11~~	8
		27-45	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	24	24	24	23	23	23	22	22	20	21	21	17	20	20	14	19	18	12	18	16	16	16	14	14
			Exposed	25	25	25	25	25	25	25	25	24	25	25	21	25	25	19	24	24	17	23	22	15	21	19	12	18	16	16	15	14	13	13	18	~~11~~	18	16	~~10~~	16	14	9

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 3.00	23 sq.ft	LANDSCAPE	CROSS-SLOPE	NXT	NXT COMBO	Solarhooks CT2
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																										
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																										
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
0	B	0-7	Interior	101	101	101	101	101	101	101	101	96	101	101	91	101	101	87	101	97	83	101	93	80	100	86	59	93	80	50	87	62	44	81	54	38	65	47	34	58	42	30
			Exposed	101	101	87	101	96	82	101	91	71	101	87	60	96	83	55	92	80	50	88	64	45	82	54	38	64	46	33	55	40	29	48	35	25	42	31	33	38	28	29
		7-20	Interior	102	102	102	102	102	99	102	102	93	102	97	88	102	92	84	102	88	80	98	84	61	89	63	52	83	54	44	76	46	38	62	41	34	55	36	30	49	32	26
			Exposed	102	92	83	102	87	68	95	82	59	90	64	53	86	58	48	83	53	44	80	49	40	63	41	34	54	35	29	46	30	25	41	27	33	36	23	29	32	32	26
		20-27	Interior	102	102	102	102	102	102	102	102	102	102	102	100	102	101	94	102	96	90	102	92	85	102	84	62	95	65	51	89	56	42	84	49	35	80	43	30	66	38	26
			Exposed	102	101	94	102	95	88	102	90	83	102	85	66	99	81	56	94	64	50	90	59	44	84	50	36	79	42	29	63	37	25	55	32	22	48	28	19	43	25	26
		27-45	Interior	103	103	103	103	103	103	103	103	103	103	103	103	103	103	99	103	103	95	103	101	90	103	93	83	94	86	64	87	81	53	81	61	45	60	54	39	54	48	34
			Exposed	103	103	99	103	103	93	103	99	89	103	94	84	98	90	81	93	86	63	89	82	56	81	62	46	59	53	38	51	46	32	45	40	27	40	36	24	35	32	21
	C	0-7	Interior	101	101	90	101	99	85	101	94	81	101	90	65	100	86	59	95	82	53	91	77	49	85	58	41	76	50	35	59	43	31	52	38	27	46	33	36	40	30	32
			Exposed	99	86	58	94	81	52	90	68	47	85	60	42	82	54	38	73	49	35	62	45	32	52	38	27	45	33	35	39	28	30	34	25	27	30	33	23	26	29	21
		7-20	Interior	102	96	87	102	90	82	100	85	63	92	81	57	89	63	52	85	57	47	82	52	43	69	44	36	58	38	31	50	33	27	44	29	24	38	25	31	34	34	28
			Exposed	89	62	51	85	56	46	81	50	41	72	45	37	63	41	34	57	37	31	52	34	28	44	29	24	38	25	31	33	32	27	29	28	23	38	25	21	34	22	18
		20-27	Interior	102	102	98	102	99	92	102	93	87	102	88	82	102	84	62	97	80	55	93	63	49	87	53	39	81	46	32	69	39	27	59	34	24	52	30	21	46	27	28
			Exposed	102	84	61	96	79	53	91	60	46	88	54	40	84	49	36	81	45	32	75	41	28	59	35	24	51	30	20	44	26	27	38	34	23	34	30	21	30	27	18
		27-45	Interior	103	103	103	103	103	97	103	103	92	103	97	87	102	93	83	97	89	80	92	85	61	84	71	50	64	57	41	55	49	35	48	43	30	43	38	26	38	34	22
			Exposed	102	93	83	96	88	73	90	83	58	85	79	51	81	62	46	63	56	41	58	52	37	49	44	30	42	37	25	36	32	21	32	28	28	28	25	24	25	34	21
	D	0-7	Interior	101	96	83	101	91	72	101	87	60	96	83	54	92	79	49	88	63	45	84	58	41	71	49	35	57	42	30	50	36	26	43	32	34	38	28	30	34	25	27
			Exposed	91	78	49	87	62	44	83	55	39	76	50	35	62	45	32	57	41	29	52	38	27	44	32	34	38	27	29	33	36	25	28	31	22	25	28	20	34	25	17
		7-20	Interior	102	87	74	95	82	59	90	64	53	86	58	48	83	52	43	79	48	39	68	44	36	56	37	31	48	32	26	42	27	34	37	24	30	32	32	26	29	28	24
			Exposed	82	52	43	77	47	38	64	42	35	58	38	31	52	34	28	48	31	26	44	29	24	37	24	30	32	31	26	27	27	23	36	24	20	32	21	17	28	19	15
		20-27	Interior	102	95	89	102	90	84	102	85	65	98	81	56	93	63	49	90	58	43	86	53	39	81	45	31	65	38	26	56	33	23	49	29	20	43	26	26	39	34	24
			Exposed	93	63	49	89	56	42	85	51	37	82	46	32	75	41	29	64	38	26	59	35	24	50	29	20	43	25	26	37	33	23	32	29	20	28	25	17	38	23	15
		27-45	Interior	103	103	94	103	99	89	103	94	84	98	89	80	93	85	62	88	82	55	84	69	49	62	56	40	53	48	34	46	41	28	40	36	24	36	32	21	32	28	28
			Exposed	92	85	61	87	81	53	82	63	47	64	57	42	58	52	37	53	47	33	48	43	30	41	37	25	35	31	21	30	27	26	27	24	22	23	32	20	32	28	17
10	B	0-7	Interior	90	90	90	90	90	90	90	90	90	90	90	90	90	90	87	90	90	83	90	90	80	90	86	59	90	80	50	87	62	44	81	54	38	65	47	34	58	42	30
			Exposed	90	90	87	90	90	82	90	90	71	90	87	60	90	83	55	90	80	50	88	64	45	82	54	38	64	46	33	55	40	29	48	35	25	42	31	33	38	28	29
		7-20	Interior	91	91	91	91	91	91	91	91	91	91	91	88	91	91	84	91	88	80	91	84	61	89	63	52	83	54	44	76	46	38	62	41	34	55	36	30	49	32	26
			Exposed	91	91	83	91	87	68	91	82	59	90	64	53	86	58	48	83	53	44	80	49	40	63	41	34	54	35	29	46	30	25	41	27	33	36	23	29	32	32	26
		20-27	Interior	99	99	99	99	99	99	99	99	99	99	99	99	99	99	94	99	96	90	99	92	85	99	84	62	95	65	51	89	56	42	84	49	35	80	43	30	66	38	26
			Exposed	99	99	94	99	95	88	99	90	83	99	85	66	99	81	56	94	64	50	90	59	44	84	50	36	79	42	29	63	37	25	55	32	22	48	28	19	43	25	26
		27-45	Interior	101	101	101	101	101	101	101	101	101	101	101	101	101	101	99	101	101	95	101	101	90	101	93	83	94	86	64	87	81	53	81	61	45	60	54	39	54	48	34
			Exposed	101	101	99	101	101	93	101	99	89	101	94	84	98	90	81	93	86	63	89	82	56	81	62	46	59	53	38	51	46	32	45	40	27	40	36	24	35	32	21
	C	0-7	Interior	90	90	90	90	90	85	90	90	81	90	90	65	90	86	59	90	82	53	90	77	49	85	58	41	76	50	35	59	43	31	52	38	27	46	33	36	40	30	32
			Exposed	90	86	58	90	81	52	90	68	47	85	60	42	82	54	38	73	49	35	62	45	32	52	38	27	45	33	35	39	28	30	34	25	27	30	33	23	26	29	21
		7-20	Interior	91	91	87	91	90	82	91	85	63	91	81	57	89	63	52	85	57	47	82	52	43	69	44	36	58	38	31	50	33	27	44	29	24	38	25	31	34	34	28
			Exposed	89	62	51	85	56	46	81	50	41	72	45	37	63	41	34	57	37	31	52	34	28	44	29	24	38	25	31	33	32	27	29	28	23	38	25	21	34	22	18
		20-27	Interior	99	99	98	99	99	92	99	93	87	99	88	82	99	84	62	97	80	55	93	63	49	87	53	39	81	46	32	69	39	27	59	34	24	52	30	21	46	27	28
			Exposed	99	84	61	96	79	53	91	60	46	88	54	40	84	49	36	81	45	32	75	41	28	59	35	24	51	30	20	44	26	27	38	34	23	34	30	21	30	27	18
		27-45	Interior	101	101	101	101	101	97	101	101	92	101	97	87	101	93	83	97	89	80	92	85	61	84	71	50	64	57	41	55	49	35	48	43	30	43	38	26	38	34	22
			Exposed	101	93	83	96	88	73	90	83	58	85	79	51	81	62	46	63	56	41	58	52	37	49	44	30	42	37	25	36	32	21	32	28	28	28	25	24	25	34	21
	D	0-7	Interior	90	90	83	90	90	72	90	87	60	90	83	54	90	79	49	88	63	45	84	58	41	71	49	35	57	42	30	50	36	26	43	32	34	38	28	30	34	25	27
			Exposed	90	78	49	87	62	44	83	55	39	76	50	35	62	45	32	57	41	29	52	38	27	44	32	34	38	27	29	33	36	25	28	31	22	25	28	20	34	25	17
		7-20	Interior	91	87	74	91	82	59	90	64	53	86	58	48	83	52	43	79	48	39	68	44	36	56	37	31	48	32	26	42	27	34	37	24	30	32	32	26	29	28	24
			Exposed	82	52	43	77	47	38	64	42	35	58	38	31	52	34	28	48	31	26	44	29	24	37	24	30	32	31	26	27	27	23	36	24	20	32	21	17	28	19	15
		20-27	Interior	100	95	89	100	90	84	100	85	65	98	81	56	93	63	49	90	58	43	86	53	39	81	45	31	65	38	26	56	33	23	49	29	20	43	26	26	39	34	24
			Exposed	93	63	49	89	56	42	85	51	37	82	46	32	75	41	29	64	38	26	59	35	24	50	29	20	43	25	26	37	33	23	32	29	20	28	25	17	38	23	15
		27-45	Interior	102	102	94	102	99	89	102	94	84	98	89	80	93	85	62	88	82	55	84	69	49	62	56	40	53	48	34	46	41	28	40	36	24	36	32	21	32	28	28
			Exposed	92	85	61	87	81	53	82	63	47	64	57	42	58	52	37	53	47	33	48	43	30	41	37	25	35	31	21	30	27	26	27	24	22	23	32	20	32	28	17
20	B	0-7	Interior	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	59	71	71	50	71	62	44	71	54	38	65	47	34	58	42	30
			Exposed	71	71	71	71	71	71	71	71	71	71	71	60	71	71	55	71	71	50	71	64	45	71	54	38	64	46	33	55	40	29	48	35	25	42	31	33	38	28	29
		7-20	Interior	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	61	71	63	52	71	54	44	71	46	38	62	41	34	55	36	30	49	32	26
			Exposed	71	71	71	71	71	68	71	71	59	71	64	53	71	58	48	71	53	44	71	49	40	63	41	34	54	35	29	46	30	25	41	27	33	36	23	29	32	32	26
		20-27	Interior	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	90	92	92	85	92	84	62	92	65	51	89	56	42	84	49	35	80	43	30	66	38	26
			Exposed	92	92	92	92	92	88	92	90	83	92	85	66	92	81	56	92	64	50	90	59	44	84	50	36	79	42	29	63	37	25	55	32	22	48	28	19	43	25	26
		27-45	Interior	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	90	95	93	83	94	86	64	87	81	53	81	61	45	60	54	39	54	48	34
			Exposed	95	95	95	95	95	93	95	95	89	95	94	84	95	90	81	93	86	63	89	82	56	81	62	46	59	53	38	51	46	32	45	40	27	40	36	24	35	32	21
	C	0-7	Interior	71	71	71	71	71	71	71	71	71	71	71	65	71	71	59	71	71	53	71	71	49	71	58	41	71	50	35	59	43	31	52	38	27	46	33	36	40	30	32
			Exposed	71	71	58	71	71	52	71	68	47	71	60	42	71	54	38	71	49	35	62	45	32	52	38	27	45	33	35	39	28	30	34	25	27	30	33	23	26	29	21
		7-20	Interior	71	71	71	71	71	71	71	71	63	71	71	57	71	63	52	71	57	47	71	52	43	69	44	36	58	38	31	50	33	27	44	29	24	38	25	31	34	34	28
			Exposed	71	62	51	71	56	46	71	50	41	71	45	37	63	41	34	57	37	31	52	34	28	44	29	24	38	25	31	33	32	27	29	28	23	38	25	21	34	22	18
		20-27	Interior	92	92	92	92	92	92	92	92	87	92	88	82	92	84	62	92	80	55	92	63	49	87	53	39	81	46	32	69	39	27	59	34	24	52	30	21	46	27	28
			Exposed	92	84	61	92	79	53	91	60	46	88	54	40	84	49	36	81	45	32	75	41	28	59	35	24	51	30	20	44	26	27	38	34	23	34	30	21	30	27	18
		27-45	Interior	95	95	95	95	95	95	95	95	92	95	95	87	95	93	83	95	89	80	92	85	61	84	71	50	64	57	41	55	49	35	48	43	30	43	38	26	38	34	22
			Exposed	95	93	83	95	88	73	90	83	58	85	79	51	81	62	46	63	56	41	58	52	37	49	44	30	42	37	25	36	32	21	32	28	28	28	25	24	25	34	21
	D	0-7	Interior	71	71	71	71	71	71	71	71	60	71	71	54	71	71	49	71	63	45	71	58	41	71	49	35	57	42	30	50	36	26	43	32	34	38	28	30	34	25	27
			Exposed	71	71	49	71	62	44	71	55	39	71	50	35	62	45	32	57	41	29	52	38	27	44	32	34	38	27	29	33	36	25	28	31	22	25	28	20	34	25	17
		7-20	Interior	71	71	71	71	71	59	71	64	53	71	58	48	71	52	43	71	48	39	68	44	36	56	37	31	48	32	26	42	27	34	37	24	30	32	32	26	29	28	24
			Exposed	71	52	43	71	47	38	64	42	35	58	38	31	52	34	28	48	31	26	44	29	24	37	24	30	32	31	26	27	27	23	36	24	20	32	21	17	28	19	15
		20-27	Interior	93	93	89	93	90	84	93	85	65	93	81	56	93	63	49	90	58	43	86	53	39	81	45	31	65	38	26	56	33	23	49	29	20	43	26	26	39	34	24
			Exposed	93	63	49	89	56	42	85	51	37	82	46	32	75	41	29	64	38	26	59	35	24	50	29	20	43	25	26	37	33	23	32	29	20	28	25	17	38	23	15
		27-45	Interior	96	96	94	96	96	89	96	94	84	96	89	80	93	85	62	88	82	55	84	69	49	62	56	40	53	48	34	46	41	28	40	36	24	36	32	21	32	28	28
			Exposed	92	85	61	87	81	53	82	63	47	64	57	42	58	52	37	53	47	33	48	43	30	41	37	25	35	31	21	30	27	26	27	24	22	23	32	20	32	28	17

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 3.00	23 sq.ft	LANDSCAPE	CROSS-SLOPE	NXT	NXT COMBO	Solarhooks CT2
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																								
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																								
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
30	B	0-7	Interior	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	59	69	69	50	69	62	44	69	54	38	65	47	34	58	42	30
			Exposed	69	69	69	69	69	69	69	69	69	69	69	60	69	69	55	69	69	50	69	64	45	69	54	38	64	46	33	55	40	29	48	35	25	42	31	33	38	28	29
		7-20	Interior	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	61	71	63	52	71	54	44	71	46	38	62	41	34	55	36	30	49	32	26
			Exposed	71	71	71	71	71	68	71	71	59	71	64	53	71	58	48	71	53	44	71	49	40	63	41	34	54	35	29	46	30	25	41	27	33	36	23	29	32	32	26
		20-27	Interior	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	84	62	85	65	51	85	56	42	84	49	35	80	43	30	66	38	26
			Exposed	85	85	85	85	85	85	85	85	83	85	85	66	85	81	56	85	64	50	85	59	44	84	50	36	79	42	29	63	37	25	55	32	22	48	28	19	43	25	26
		27-45	Interior	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	83	90	86	64	87	81	53	81	61	45	60	54	39	54	48	34
			Exposed	90	90	90	90	90	90	90	90	89	90	90	84	90	90	81	90	86	63	89	82	56	81	62	46	59	53	38	51	46	32	45	40	27	40	36	24	35	32	21
	C	0-7	Interior	69	69	69	69	69	69	69	69	69	69	69	65	69	69	59	69	69	53	69	69	49	69	58	41	69	50	35	59	43	31	52	38	27	46	33	36	40	30	32
			Exposed	69	69	58	69	69	52	69	68	47	69	60	42	69	54	38	69	49	35	62	45	32	52	38	27	45	33	35	39	28	30	34	25	27	30	33	23	26	29	21
		7-20	Interior	71	71	71	71	71	71	71	71	63	71	71	57	71	63	52	71	57	47	71	52	43	69	44	36	58	38	31	50	33	27	44	29	24	38	25	31	34	34	28
			Exposed	71	62	51	71	56	46	71	50	41	71	45	37	63	41	34	57	37	31	52	34	28	44	29	24	38	25	31	33	32	27	29	28	23	38	25	21	34	22	18
		20-27	Interior	85	85	85	85	85	85	85	85	85	85	85	82	85	84	62	85	80	55	85	63	49	85	53	39	81	46	32	69	39	27	59	34	24	52	30	21	46	27	28
			Exposed	85	84	61	85	79	53	85	60	46	85	54	40	84	49	36	81	45	32	75	41	28	59	35	24	51	30	20	44	26	27	38	34	23	34	30	21	30	27	18
		27-45	Interior	90	90	90	90	90	90	90	90	90	90	90	87	90	90	83	90	89	80	90	85	61	84	71	50	64	57	41	55	49	35	48	43	30	43	38	26	38	34	22
			Exposed	90	90	83	90	88	73	90	83	58	85	79	51	81	62	46	63	56	41	58	52	37	49	44	30	42	37	25	36	32	21	32	28	28	28	25	24	25	34	21
	D	0-7	Interior	71	71	71	71	71	71	71	71	60	71	71	54	71	71	49	71	63	45	71	58	41	71	49	35	57	42	30	50	36	26	43	32	34	38	28	30	34	25	27
			Exposed	71	71	49	71	62	44	71	55	39	71	50	35	62	45	32	57	41	29	52	38	27	44	32	34	38	27	29	33	36	25	28	31	22	25	28	20	34	25	17
		7-20	Interior	71	71	71	71	71	59	71	64	53	71	58	48	71	52	43	71	48	39	68	44	36	56	37	31	48	32	26	42	27	34	37	24	30	32	32	26	29	28	24
			Exposed	71	52	43	71	47	38	64	42	35	58	38	31	52	34	28	48	31	26	44	29	24	37	24	30	32	31	26	27	27	23	36	24	20	32	21	17	28	19	15
		20-27	Interior	87	87	87	87	87	84	87	85	65	87	81	56	87	63	49	87	58	43	86	53	39	81	45	31	65	38	26	56	33	23	49	29	20	43	26	26	39	34	24
			Exposed	87	63	49	87	56	42	85	51	37	82	46	32	75	41	29	64	38	26	59	35	24	50	29	20	43	25	26	37	33	23	32	29	20	28	25	17	38	23	15
		27-45	Interior	91	91	91	91	91	89	91	91	84	91	89	80	91	85	62	88	82	55	84	69	49	62	56	40	53	48	34	46	41	28	40	36	24	36	32	21	32	28	28
			Exposed	91	85	61	87	81	53	82	63	47	64	57	42	58	52	37	53	47	33	48	43	30	41	37	25	35	31	21	30	27	26	27	24	22	23	32	20	32	28	17
40	B	0-7	Interior	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	50	57	57	50	57	57	44	57	54	38	57	47	34	57	42	30
			Exposed	57	57	57	57	57	57	57	57	57	57	57	57	57	57	55	57	57	50	57	57	45	57	54	38	57	46	33	55	40	29	48	35	25	42	31	33	38	28	29
		7-20	Interior	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	52	60	54	44	60	46	38	60	41	34	55	36	30	49	32	26
			Exposed	60	60	60	60	60	60	60	60	59	60	60	53	60	58	48	60	53	44	60	49	40	60	41	34	54	35	29	46	30	25	41	27	33	36	23	29	32	32	26
		20-27	Interior	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	62	74	65	51	74	56	42	74	49	35	74	43	30	66	38	26
			Exposed	74	74	74	74	74	74	74	74	74	74	74	66	74	74	56	74	64	50	74	59	44	74	50	36	74	42	29	63	37	25	55	32	22	48	28	19	43	25	26
		27-45	Interior	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	83	85	85	64	79	79	53	73	61	45	60	54	39	54	48	34
			Exposed	85	85	85	85	85	85	85	85	85	85	85	84	85	85	81	85	85	63	85	82	56	81	62	46	59	53	38	51	46	32	45	40	27	40	36	24	35	32	21
	C	0-7	Interior	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	53	57	57	49	57	57	41	57	50	35	57	43	31	52	38	27	46	33	36	40	30	32
			Exposed	57	57	57	57	57	52	57	57	47	57	57	42	57	54	38	57	49	35	57	45	32	52	38	27	45	33	35	39	28	30	34	25	27	30	33	23	26	29	21
		7-20	Interior	60	60	60	60	60	60	60	60	60	60	60	57	60	60	52	60	57	47	60	52	43	60	44	36	58	38	31	50	33	27	44	29	24	38	25	31	34	34	28
			Exposed	60	60	51	60	56	46	60	50	41	60	45	37	60	41	34	57	37	31	52	34	28	44	29	24	38	25	31	33	32	27	29	28	23	38	25	21	34	22	18
		20-27	Interior	74	74	74	74	74	74	74	74	74	74	74	74	74	74	62	74	74	55	74	63	49	74	53	39	74	46	32	69	39	27	59	34	24	52	30	21	46	27	28
			Exposed	74	74	61	74	74	53	74	60	46	74	54	40	74	49	36	74	45	32	74	41	28	59	35	24	51	30	20	44	26	27	38	34	23	34	30	21	30	27	18
		27-45	Interior	85	85	85	85	85	85	85	85	85	85	85	85	85	85	83	85	85	80	84	84	61	77	71	50	64	57	41	55	49	35	48	43	30	43	38	26	38	34	22
			Exposed	85	85	83	85	85	73	85	83	58	85	79	51	81	62	46	63	56	41	58	52	37	49	44	30	42	37	25	36	32	21	32	28	28	28	25	24	25	34	21
	D	0-7	Interior	61	61	61	61	61	61	61	61	60	61	61	54	61	61	49	61	61	45	61	58	41	61	49	35	57	42	30	50	36	26	43	32	34	38	28	30	34	25	27
			Exposed	61	61	49	61	61	44	61	55	39	61	50	35	61	45	32	57	41	29	52	38	27	44	32	34	38	27	29	33	36	25	28	31	22	25	28	20	34	25	17
		7-20	Interior	65	65	65	65	65	59	65	64	53	65	58	48	65	52	43	65	48	39	65	44	36	56	37	31	48	32	26	42	27	34	37	24	30	32	32	26	29	28	24
			Exposed	65	52	43	65	47	38	64	42	35	58	38	31	52	34	28	48	31	26	44	29	24	37	24	30	32	31	26	27	27	23	36	24	20	32	21	17	28	19	15
		20-27	Interior	79	79	79	79	79	79	79	79	65	79	79	56	79	63	49	79	58	43	79	53	39	79	45	31	65	38	26	56	33	23	49	29	20	43	26	26	39	34	24
			Exposed	79	63	49	79	56	42	79	51	37	79	46	32	75	41	29	64	38	26	59	35	24	50	29	20	43	25	26	37	33	23	32	29	20	28	25	17	38	23	15
		27-45	Interior	87	87	87	87	87	87	87	87	84	87	87	80	87	85	62	85	82	55	83	69	49	62	56	40	53	48	34	46	41	28	40	36	24	36	32	21	32	28	28
			Exposed	87	85	61	87	81	53	82	63	47	64	57	42	58	52	37	53	47	33	48	43	30	41	37	25	35	31	21	30	27	26	27	24	22	23	32	20	32	28	17
50	B	0-7	Interior	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	44	47	47	38	47	47	34	47	42	30
			Exposed	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	45	47	47	38	47	46	33	47	40	29	47	35	25	42	31	33	38	28	29
		7-20	Interior	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	44	50	46	38	50	41	34	50	36	30	49	32	26
			Exposed	50	50	50	50	50	50	50	50	50	50	50	50	50	50	48	50	50	44	50	49	40	50	41	34	50	35	29	46	30	25	41	27	33	36	23	29	32	32	26
		20-27	Interior	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	62	64	64	51	64	56	42	64	49	35	63	43	30	60	38	26
			Exposed	64	64	64	64	64	64	64	64	64	64	64	64	64	64	56	64	64	50	64	59	44	64	50	36	64	42	29	63	37	25	55	32	22	48	28	19	43	25	26
		27-45	Interior	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	72	72	64	67	67	53	63	61	45	60	54	39	54	48	34
			Exposed	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	63	75	75	56	75	62	46	59	53	38	51	46	32	45	40	27	40	36	24	35	32	21
	C	0-7	Interior	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	41	47	47	35	47	43	31	47	38	27	46	33	36	40	30	32
			Exposed	47	47	47	47	47	47	47	47	47	47	47	42	47	47	38	47	47	35	47	45	32	47	38	27	45	33	35	39	28	30	34	25	27	30	33	23	26	29	21
		7-20	Interior	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	47	50	50	43	50	44	36	50	38	31	49	33	27	44	29	24	38	25	31	34	34	28
			Exposed	50	50	50	50	50	46	50	50	41	50	45	37	50	41	34	50	37	31	50	34	28	44	29	24	38	25	31	33	32	27	29	28	23	38	25	21	34	22	18
		20-27	Interior	64	64	64	64	64	64	64	64	64	64	64	64	64	64	62	64	64	55	64	63	49	64	53	39	64	46	32	61	39	27	58	34	24	52	30	21	46	27	28
			Exposed	64	64	61	64	64	53	64	60	46	64	54	40	64	49	36	64	45	32	64	41	28	59	35	24	51	30	20	44	26	27	38	34	23	34	30	21	30	27	18
		27-45	Interior	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	74	74	74	71	71	61	65	65	50	61	57	41	55	49	35	48	43	30	43	38	26	38	34	22
			Exposed	75	75	75	75	75	73	75	75	58	75	75	51	75	62	46	63	56	41	58	52	37	49	44	30	42	37	25	36	32	21	32	28	28	28	25	24	25	34	21
	D	0-7	Interior	51	51	51	51	51	51	51	51	51	51	51	51	51	51	49	51	51	45	51	51	41	51	49	35	51	42	30	50	36	26	43	32	34	38	28	30	34	25	27
			Exposed	51	51	49	51	51	44	51	51	39	51	50	35	51	45	32	51	41	29	51	38	27	44	32	34	38	27	29	33	36	25	28	31	22	25	28	20	34	25	17
		7-20	Interior	56	56	56	56	56	56	56	56	53	56	56	48	56	52	43	56	48	39	56	44	36	54	37	31	48	32	26	42	27	34	37	24	30	32	32	26	29	28	24
			Exposed	56	52	43	56	47	38	56	42	35	56	38	31	52	34	28	48	31	26	44	29	24	37	24	30	32	31	26	27	27	23	36	24	20	32	21	17	28	19	15
		20-27	Interior	69	69	69	69	69	69	69	69	65	69	69	56	69	63	49	69	58	43	69	53	39	68	45	31	65	38	26	56	33	23	49	29	20	43	26	26	39	34	24
			Exposed	69	63	49	69	56	42	69	51	37	69	46	32	69	41	29	64	38	26	59	35	24	50	29	20	43	25	26	37	33	23	32	29	20	28	25	17	38	23	15
		27-45	Interior	80	80	80	80	80	80	80	80	80	80	80	80	77	77	62	74	74	55	70	69	49	62	56	40	53	48	34	46	41	28	40	36	24	36	32	21	32	28	28
			Exposed	80	80	61	80	80	53	80	63	47	64	57	42	58	52	37	53	47	33	48	43	30	41	37	25	35	31	21	30	27	26	27	24	22	23	32	20	32	28	17

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 3.00	23 sq.ft	LANDSCAPE	CROSS-SLOPE	NXT	NXT COMBO	Solarhooks CT2
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																								
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																								
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
60	B	0-7	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	38	39	39	34	39	39	30
			Exposed	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	38	39	39	33	39	39	29	39	35	25	39	31	33	38	28	29
		7-20	Interior	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	38	43	41	34	43	36	30	43	32	26
			Exposed	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	40	43	41	34	43	35	29	43	30	25	41	27	33	36	23	29	32	32	26
		20-27	Interior	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	51	57	56	42	57	49	35	55	43	30	53	38	26
			Exposed	57	57	57	57	57	57	57	57	57	57	57	57	57	57	56	57	57	50	57	57	44	57	50	36	57	42	29	57	37	25	55	32	22	48	28	19	43	25	26
		27-45	Interior	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	66	66	66	63	63	63	60	60	53	57	57	45	55	54	39	52	48	34
			Exposed	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	63	67	67	56	66	62	46	59	53	38	51	46	32	45	40	27	40	36	24	35	32	21
	C	0-7	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	35	39	39	31	39	38	27	39	33	36	39	30	32
			Exposed	39	39	39	39	39	39	39	39	39	39	39	39	39	39	38	39	39	35	39	39	32	39	38	27	39	33	35	39	28	30	34	25	27	30	33	~~23~~	26	29	~~21~~
		7-20	Interior	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	36	43	38	31	43	33	27	41	29	24	38	25	31	34	34	28
			Exposed	43	43	43	43	43	43	43	43	41	43	43	37	43	41	34	43	37	31	43	34	28	43	29	24	38	25	31	33	32	27	29	28	23	38	25	~~21~~	34	~~22~~	~~18~~
		20-27	Interior	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	55	57	57	49	57	53	39	56	46	32	54	39	27	52	34	24	50	30	21	46	27	28
			Exposed	57	57	57	57	57	53	57	57	46	57	54	40	57	49	36	57	45	32	57	41	28	57	35	24	51	30	20	44	26	27	38	34	23	34	30	21	30	27	~~18~~
		27-45	Interior	67	67	67	67	67	67	67	67	67	67	67	67	66	66	66	64	64	64	62	62	61	59	59	50	56	56	41	53	49	35	48	43	30	43	38	26	38	34	22
			Exposed	67	67	67	67	67	67	67	67	58	67	67	51	66	62	46	63	56	41	58	52	37	49	44	30	42	37	25	36	32	21	32	28	28	28	25	24	25	34	21
	D	0-7	Interior	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	41	43	43	35	43	42	30	43	36	26	43	32	34	38	28	30	34	25	27
			Exposed	43	43	43	43	43	43	43	43	39	43	43	35	43	43	32	43	41	29	43	38	27	43	32	34	38	27	29	33	36	25	28	31	~~22~~	25	28	~~20~~	34	25	~~17~~
		7-20	Interior	47	47	47	47	47	47	47	47	47	47	47	47	47	47	43	47	47	39	47	44	36	47	37	31	46	32	26	42	27	34	37	24	30	32	32	26	29	28	24
			Exposed	47	47	43	47	47	38	47	42	35	47	38	31	47	34	28	47	31	26	44	29	24	37	24	30	32	31	26	27	27	~~23~~	36	24	~~20~~	32	~~21~~	~~17~~	28	~~19~~	~~15~~
		20-27	Interior	61	61	61	61	61	61	61	61	61	61	61	56	61	61	49	61	58	43	61	53	39	60	45	31	57	38	26	55	33	23	49	29	20	43	26	26	39	34	24
			Exposed	61	61	49	61	56	42	61	51	37	61	46	32	61	41	29	61	38	26	59	35	24	50	29	20	43	25	26	37	33	23	32	29	20	28	25	~~17~~	38	~~23~~	~~15~~
		27-45	Interior	72	72	72	72	72	72	72	72	72	70	70	70	67	67	62	64	64	55	62	62	49	58	56	40	53	48	34	46	41	28	40	36	24	36	32	21	32	28	28
			Exposed	72	72	61	72	72	53	72	63	47	64	57	42	58	52	37	53	47	33	48	43	30	41	37	25	35	31	21	30	27	26	27	24	22	23	32	20	32	28	~~17~~
70	B	0-7	Interior	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	30
			Exposed	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	33	34	34	29	34	34	25	34	31	33	34	28	29
		7-20	Interior	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	34	37	36	30	37	32	26
			Exposed	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	34	37	35	29	37	30	25	37	27	33	36	23	29	32	32	26
		20-27	Interior	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	42	50	49	35	49	43	30	48	38	26
			Exposed	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	44	50	50	36	50	42	29	50	37	25	50	32	22	48	28	19	43	25	26
		27-45	Interior	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	60	60	60	57	57	57	55	55	53	53	53	45	50	50	39	48	48	34
			Exposed	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	56	60	60	46	57	53	38	51	46	32	45	40	27	40	36	24	35	32	21
	C	0-7	Interior	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	31	34	34	27	34	33	36	34	30	32
			Exposed	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	32	34	34	27	34	33	35	34	28	30	34	25	27	30	33	~~23~~	26	29	~~21~~
		7-20	Interior	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	36	37	37	31	37	33	27	37	29	24	36	25	31	34	34	28
			Exposed	37	37	37	37	37	37	37	37	37	37	37	37	37	37	34	37	37	31	37	34	28	37	29	24	37	25	31	33	32	27	29	28	23	38	25	~~21~~	34	~~22~~	~~18~~
		20-27	Interior	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	49	50	50	39	50	46	32	48	39	27	47	34	24	45	30	21	43	27	28
			Exposed	50	50	50	50	50	50	50	50	46	50	50	40	50	49	36	50	45	32	50	41	28	50	35	24	50	30	20	44	26	27	38	34	23	34	30	21	30	27	~~18~~
		27-45	Interior	61	61	61	61	61	61	61	61	61	61	61	61	60	60	60	58	58	58	57	57	57	54	54	50	51	51	41	49	49	35	46	43	30	43	38	26	38	34	22
			Exposed	61	61	61	61	61	61	61	61	58	61	61	51	60	60	46	58	56	41	57	52	37	49	44	30	42	37	25	36	32	21	32	28	28	28	25	24	25	34	21
	D	0-7	Interior	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	35	37	37	30	37	36	26	37	32	34	37	28	30	34	25	27
			Exposed	37	37	37	37	37	37	37	37	37	37	37	35	37	37	32	37	37	29	37	37	27	37	32	34	37	27	29	33	36	25	28	31	~~22~~	25	28	~~20~~	34	25	~~17~~
		7-20	Interior	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	39	41	41	36	41	37	31	41	32	26	40	27	34	37	24	30	32	32	26	29	28	24
			Exposed	41	41	41	41	41	38	41	41	35	41	38	31	41	34	28	41	31	26	41	29	24	37	24	30	32	31	26	27	27	~~23~~	36	24	~~20~~	32	~~21~~	~~17~~	28	~~19~~	~~15~~
		20-27	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	49	55	55	43	55	53	39	54	45	31	52	38	26	49	33	23	47	29	20	43	26	26	39	34	24
			Exposed	55	55	49	55	55	42	55	51	37	55	46	32	55	41	29	55	38	26	55	35	24	50	29	20	43	25	26	37	33	23	32	29	20	28	25	~~17~~	38	~~23~~	~~15~~
		27-45	Interior	65	65	65	65	65	65	64	64	64	63	63	63	61	61	61	59	59	55	57	57	49	54	54	40	51	48	34	46	41	28	40	36	24	36	32	21	32	28	28
			Exposed	65	65	61	65	65	53	64	63	47	63	57	42	58	52	37	53	47	33	48	43	30	41	37	25	35	31	21	30	27	26	27	24	22	23	32	20	32	28	~~17~~
80	B	0-7	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
			Exposed	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	25	30	30	33	30	28	29
		7-20	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	26
			Exposed	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	29	32	30	25	32	27	33	32	23	29	32	32	26
		20-27	Interior	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	42	44	44	35	44	43	30	44	38	26
			Exposed	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	36	44	42	29	44	37	25	44	32	22	44	28	19	43	25	26
		27-45	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	53	53	53	51	51	51	49	49	45	47	47	39	45	45	34
			Exposed	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	46	53	53	38	51	46	32	45	40	27	40	36	24	35	32	21
	C	0-7	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	27	30	30	36	30	30	32
			Exposed	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	27	30	30	35	30	28	30	30	25	27	30	33	~~23~~	26	29	~~21~~
		7-20	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	31	32	32	27	32	29	24	32	25	31	32	34	28
			Exposed	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	31	32	32	28	32	29	24	32	25	31	32	32	27	29	28	23	38	25	~~21~~	34	~~22~~	~~18~~
		20-27	Interior	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	39	44	44	32	44	39	27	42	34	24	41	30	21	40	27	28
			Exposed	44	44	44	44	44	44	44	44	44	44	44	40	44	44	36	44	44	32	44	41	28	44	35	24	44	30	20	44	26	27	38	34	23	34	30	21	30	27	~~18~~
		27-45	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	53	53	53	52	52	52	50	50	50	47	47	41	45	45	35	43	43	30	41	38	26	38	34	22
			Exposed	55	55	55	55	55	55	55	55	55	55	55	51	55	55	46	53	53	41	52	52	37	49	44	30	42	37	25	36	32	21	32	28	28	28	25	24	25	34	21
	D	0-7	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	26	33	32	34	33	28	30	33	25	27
			Exposed	33	33	33	33	33	33	33	33	33	33	33	33	33	33	32	33	33	29	33	33	27	33	32	34	33	27	29	33	36	25	28	31	~~22~~	25	28	~~20~~	34	25	~~17~~
		7-20	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	31	36	32	26	36	27	34	35	24	30	32	32	26	29	28	24
			Exposed	36	36	36	36	36	36	36	36	35	36	36	31	36	34	28	36	31	26	36	29	24	36	24	30	32	31	26	27	27	~~23~~	36	24	~~20~~	32	~~21~~	~~17~~	28	~~19~~	~~15~~
		20-27	Interior	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	43	48	48	39	48	45	31	47	38	26	45	33	23	43	29	20	42	26	26	39	34	24
			Exposed	48	48	48	48	48	42	48	48	37	48	46	32	48	41	29	48	38	26	48	35	24	48	29	20	43	25	26	37	33	23	32	29	20	28	25	~~17~~	38	~~23~~	~~15~~
		27-45	Interior	60	60	60	60	60	60	59	59	59	57	57	57	56	56	56	54	54	54	53	53	49	50	50	40	47	47	34	45	41	28	40	36	24	36	32	21	32	28	28
			Exposed	60	60	60	60	60	53	59	59	47	57	57	42	56	52	37	53	47	33	48	43	30	41	37	25	35	31	21	30	27	26	27	24	22	23	32	20	32	28	~~17~~

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 3.00	23 sq.ft	LANDSCAPE	CROSS-SLOPE	NXT	NXT COMBO	Solarhooks CT2
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																						
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
90	B	0-7	Interior	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27
			Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	25	27	27	33	27	27	29
		7-20	Interior	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	26
			Exposed	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	25	29	27	33	29	23	29	29	32	26
		20-27	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	35	39	39	30	39	38	26
			Exposed	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	36	39	39	29	39	37	25	39	32	22	39	28	19	39	25	26
		27-45	Interior	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	47	47	47	45	45	45	43	43	39	42	42	34
			Exposed	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	46	49	49	38	47	46	32	45	40	27	40	36	24	35	32	21
	C	0-7	Interior	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	36	27	27	32
			Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	35	27	27	30	27	25	27	27	33	~~23~~	26	29	~~21~~
		7-20	Interior	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	27	29	29	24	29	25	31	29	34	28
			Exposed	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	28	29	29	24	29	25	31	29	32	27	29	28	23	38	25	~~21~~	34	~~22~~	~~18~~
		20-27	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	32	39	39	27	39	34	24	38	30	21	36	27	28
			Exposed	39	39	39	39	39	39	39	39	39	39	39	39	39	39	36	39	39	32	39	39	28	39	35	24	39	30	20	39	26	27	38	34	23	34	30	21	30	27	~~18~~
		27-45	Interior	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	48	48	48	46	46	46	44	44	41	42	42	35	40	40	30	38	38	26	37	34	22
			Exposed	49	49	49	49	49	49	49	49	49	49	49	49	49	49	46	49	49	41	48	48	37	46	44	30	42	37	25	36	32	21	32	28	28	28	25	24	25	34	21
	D	0-7	Interior	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	26	29	29	34	29	28	30	29	25	27
			Exposed	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	27	29	29	34	29	27	29	29	36	25	28	31	~~22~~	25	28	~~20~~	34	25	~~17~~
		7-20	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	31	32	32	26	32	27	34	32	24	30	31	32	26	29	28	24
			Exposed	32	32	32	32	32	32	32	32	32	32	32	31	32	32	28	32	31	26	32	29	24	32	24	30	32	31	26	27	27	~~23~~	36	24	~~20~~	32	~~21~~	~~17~~	28	~~19~~	~~15~~
		20-27	Interior	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	39	43	43	31	43	38	26	42	33	23	40	29	20	38	26	26	37	34	24
			Exposed	43	43	43	43	43	42	43	43	37	43	43	32	43	41	29	43	38	26	43	35	24	43	29	20	43	25	26	37	33	23	32	29	20	28	25	~~17~~	38	~~23~~	~~15~~
		27-45	Interior	55	55	55	55	55	55	54	54	54	53	53	53	52	52	52	51	51	51	49	49	49	47	47	40	44	44	34	42	41	28	40	36	24	36	32	21	32	28	28
			Exposed	55	55	55	55	55	53	54	54	47	53	53	42	52	52	37	51	47	33	48	43	30	41	37	25	35	31	21	30	27	26	27	24	22	23	32	20	32	28	~~17~~
100	B	0-7	Interior	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			Exposed	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	33	24	24	29
		7-20	Interior	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26
			Exposed	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	25	26	26	33	26	23	29	26	32	26
		20-27	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	30	35	35	26
			Exposed	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	29	35	35	25	35	32	22	35	28	19	35	25	26
		27-45	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	44	44	44	42	42	42	41	41	39	39	39	34
			Exposed	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	38	44	44	32	42	40	27	40	36	24	35	32	21
	C	0-7	Interior	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	36	24	24	32
			Exposed	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	35	24	24	30	24	24	27	24	33	~~23~~	24	29	~~21~~
		7-20	Interior	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	24	26	25	31	26	34	28
			Exposed	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	24	26	25	31	26	32	27	26	28	23	38	25	~~21~~	34	~~22~~	~~18~~
		20-27	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	32	35	35	27	35	34	24	35	30	21	34	27	28
			Exposed	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	32	35	35	28	35	35	24	35	30	20	35	26	27	35	34	23	34	30	21	30	27	~~18~~
		27-45	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	43	43	43	41	41	41	39	39	35	38	38	30	36	36	26	35	34	22
			Exposed	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	41	45	45	37	43	43	30	41	37	25	36	32	21	32	28	28	28	25	24	25	34	21
	D	0-7	Interior	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	26	27	27	34	27	27	30	27	25	27
			Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	34	27	27	29	27	36	25	27	31	~~22~~	25	28	~~20~~	34	25	~~17~~
		7-20	Interior	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	26	29	27	34	29	24	30	29	32	26	28	28	24
			Exposed	29	29	29	29	29	29	29	29	29	29	29	29	29	29	28	29	29	26	29	29	24	29	24	30	29	31	26	27	27	~~23~~	36	24	~~20~~	32	~~21~~	~~17~~	28	~~19~~	~~15~~
		20-27	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	31	39	38	26	39	33	23	37	29	20	36	26	26	34	34	24
			Exposed	39	39	39	39	39	39	39	39	37	39	39	32	39	39	29	39	38	26	39	35	24	39	29	20	39	25	26	37	33	23	32	29	20	28	25	~~17~~	38	~~23~~	~~15~~
		27-45	Interior	49	49	49	49	49	49	49	49	49	49	49	49	48	48	48	47	47	47	46	46	46	44	44	40	42	42	34	40	40	28	38	36	24	36	32	21	32	28	28
			Exposed	49	49	49	49	49	49	49	49	47	49	49	42	48	48	37	47	47	33	46	43	30	41	37	25	35	31	21	30	27	26	27	24	22	23	32	20	32	28	~~17~~

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.